IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	:	Christian MAYAUD
Serial No.	:	09/941,681
Filing Date	:	August 30, 2001
Title	:	A COMPUTERIZED PRESCRIPTION SYSTEM FOR GATHERING AND PRESENTING INFORMATION RELATING TO PHARMACEUTICALS
Examiner	:	Samuel G. Rimell
Group/Art Unit	:	2175

RECEIVED

JUN 1 0 2004

Technology Center 2100

Commissioner for Patents
Alexandria, VA 22313-1450

DECLARATION OF PRIOR INVENTION IN THE UNITED STATES OR IN A NAFTA OR WTO MEMBER COUNTRY TO OVERCOME A CITED PATENT OR PUBLICATION 37 C.F.R. § 1.131

1.   I, Christian Mayaud, am the named inventor of the '681 Application.

2.   The present '681 Application is a continuation of United States Patent Application serial number 09/121,597, filed July 24, 1998, which is a continuation of United States Patent Application serial number 08/942,372, filed October 2, 1997 (now U.S. Patent number 5,845,255), which is a continuation of U.S. Patent Application serial number 08/330,745 (the '745 Application) filed October 28, 1994 (now abandoned).

3.   On a date prior to December 13, 1993, I made a confidential presentation to a third party regarding my invention then called "Physicians' Online." In support for that presentation, I

provided a handout, a copy of which is attached hereto as Exhibit A, (all dates on submitted materials have been redacted), this handout material is numbered POL 03771 through POL 03783. This handout, Exhibit A, bears a printed date thereon (redacted) at page marked POL 03771, which shows the date that the meeting took place, a date prior to December 13, 1993. In further support of the date of this said meeting, attached hereto as Exhibit B, document no. POL 05667, is a copy of two pages from my personal calendar. In my writing there is displayed on the left side a morning entry, showing my "9:30" meeting (third party name and meeting location redacted) which date, printed on my calendar (redacted), is prior to December 13, 1993. This corroborates the date on the handout and the date the meeting took place prior to December 13, 1993. Other writings on this Exhibit B sheet reflect my notes of the parties in attendance at the meeting.

4.   On another date prior to December 13, 1993, I made another confidential presentation to another third party regarding said invention "Physicians' Online." In support for that presentation, I provided a handout, a copy of which is attached hereto as Exhibit C. This handout material is numbered THB12195 through THB12206. This handout, Exhibit C, bears a printed date thereon (redacted) at page marked THB 12195, which shows the date that the meeting took place, a date prior to December 13, 1993. This corroborates the date the meeting took place prior to December 13, 1993.

5.   On another date prior to December 13, 1993, I made another confidential presentation to another third party regarding my said invention "Physicians' Online." In support for that presentation, I provided a handout, a copy of which is attached hereto as Exhibit D. This handout material is numbered THB 08060 through THB 08072. This handout, Exhibit D, bears a

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printed date thereon (redacted) at page marked THB 08060, which shows the date that the meeting took place, a date prior to December 13, 1993. This corroborates the date the meeting took place prior to December 13, 1993.

6. On another date prior to December 13, 1993, I made a confidential presentation to a third party regarding my said invention "Physicians' Online." In support for that presentation, I provided a handout, entitled Business Summary PHASE 1 Medical Knowledge Management, which is attached hereto as Exhibit E, having document numbers POL 03290 through POL 03348. This handout, Exhibit E, bears a printed date thereon (redacted) at page marked POL 03290, which shows the date that the meeting took place, a date prior to December 13, 1993. This corroborates the date the meeting took place prior to December 13, 1993.

7. On another date prior to December 13, 1993, I made a confidential presentation to a third party regarding my said invention "Physicians' Online." In support for that presentation, I provided a handout, entitled PHASE 1 Business Plan Medical Knowledge Management, which is attached hereto as Exhibit F, having document numbers POL 02223 through POL 02301. This handout, Exhibit F, bears a printed date thereon (redacted) at page marked POL 02223, which shows the date that the meeting took place, a date prior to December 13, 1993. This corroborates the date the meeting took place prior to December 13, 1993.

8. On another date prior to December 13, 1993, I made a confidential presentation to a third party regarding my said invention "Physicians' Online." In support for that presentation, I provided a handout, entitled Physicians' Prescribing Network, which is attached hereto as Exhibit G, having document numbers THB 06006 through 06042. This handout, Exhibit G, bears a printed date thereon (redacted) at page marked THB 06006, which shows the date that

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the meeting took place, a date prior to December 13, 1993. This corroborates the date the meeting took place prior to December 13, 1993.

9. On another date prior to December 13, 1993, I sent a facsimile transmission of at least a one page document entitled "Physicians' Online: 5 year Plan," regarding my said invention, which is attached hereto as Exhibit H, having document number THB 07125. This document, Exhibit H, bears a printed date thereon (redacted) at page marked THB 07125, which shows the date of the facsimile transmission, a date prior to December 13, 1993.

10. All of the handouts and presentations referenced above in paragraphs numbered 3 through 9 support that my said invention "Physicians' Online," as presently embodied in at least claim 70 of the '681 Application, was invented by me, and was conceived by me, prior to December 13, 1993.

11. On a date prior to December 13, 1993, I retained a Patent Law Firm to file a patent application for my said inventions. From a date prior to December 13, 1993 and up to October 28, 1994 I continuously and regularly met on numerous occasions with my patent attorney who drafted my patent application. During this time I met with my patent attorney approximately two days per month at his offices so as to review his progress on this sizeable disclosure and his drafts, which I reviewed and edited. As a result of continuous and diligent meetings with my patent attorney, a patent application was drafted resulting in the '745 Application, which had 172 typewritten pages in the specification and having 16 sheets of drawings. The '745 Application was filed with 69 claims which included three independent claims. In order to draft this application, considerable amount of time was necessary to meet with my patent attorney and review each claim as well as to review the entire specification and the drawings and flow charts.

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The specification drafted by my patent attorney included at least 35 separate sections detailing and describing my invention, which required the numerous meetings with my patent attorney to draft. On information and belief, my personal calendar would support these visits with my patent attorney. At the present time my said calendar is not in my control. It may come into my control at a date in the future pending third party litigation.

12. . At all times from a date prior to December 13, 1993 through the filing date of my '745 Application, both my patent attorney and I were diligent in preparing and filing my '745 Application for patent.

13. The power point slide show presentation produced and filed in my earlier section 131 declaration for this '681 Application was developed by me on a date prior to December 13, 1993. The actual presentation was presented to several companies under confidentiality agreements on dates prior to December 13, 1993.

14. All of the handouts and presentations referenced above in paragraphs numbered 3 through 9 illustrate that I invented the subject matter of claim 70 of the '681 Application prior to December 13, 1993. In particular, I note the following:

- a prescription creation screen having prescriber-operable data capture devices is illustrated on document nos. THB 06017and 06036; and POL 02237, 02242, 02247, 02271, 02273, 03779, 03780, 03781, 03545, and 03548 of the enclosed materials;

- a patient identifier data capture device for capturing patient-identifying data is illustrated on document nos. THB 06010, 06012, 06015, 06017, and 06036; and POL 02243, 02247, 02271, 03545, and 03548 of the enclosed materials;

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- a prescribed drug data capture device for capturing prescribed drug identification data is illustrated on document nos. THB 06010, 06011, and 06012; and POL 02246, 02247, 02248, 02261, 02271, 02273, 03779, 03780, 03781, 03545, and 03548 of the enclosed materials;

- at least one drug quantifier capture device for capturing drug quantification data is illustrated on document nos. THB 06036 and POL 02247, 02248, and 02271 of the enclosed materials;

- a patient condition data capture device to capture patient condition data regarding said patient condition exhibited by said patient whereby said electronic prescription further comprises said patient condition data is illustrated on document nos. THB 06010 and 06017; and POL 02243 and 02271 of the enclosed materials;

- a library of prescribable drug data accessible by one or more of said data capture devices from said prescription management screen to display multiple prescribable drugs is illustrated on document nos. THB 06010, 06011, and 06012; and POL 02236, 02246, 02248, 02261, 02273, 03545, 03548, and 03549 of the enclosed materials;

- a prescription output screen device to output a completed prescription is illustrated on document nos. THB 06012 and 06036; and POL 02246 of the enclosed materials.

15.   I actually utilized the subject matter of claim 70 to write and generate an electronic prescription for viewing on a prescription creation screen and printed it out prior to

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December 13, 1993. The prescription was printed on a printer and included the patient condition and identification and quantification data regarding a drug prescribed by me for treatment of the patient condition, the patient condition and drug data being captured into the prescription by the data capture devices. To the best of my knowledge a copy of this prescription would still be in memory of my original computer, which at the time of making this declaration, said computer is in storage in a location not in my present control.

DECLARATION

I, Christian Mayaud, hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the united States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.
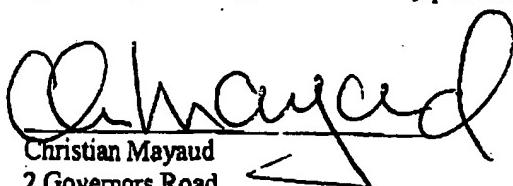
Date: __6/4/04__

Christian Mayaud
2 Governors Road
Bronxville NY 10708

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EXHIBIT A

Physicians' Online

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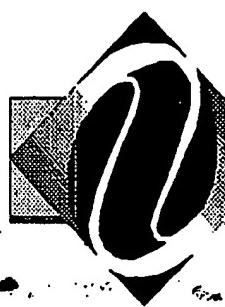
Handout

Christian Mayaud, MD
Chief Executive Officer

Steven Hochberg
Chief Operating Officer

CONFIDENTIAL
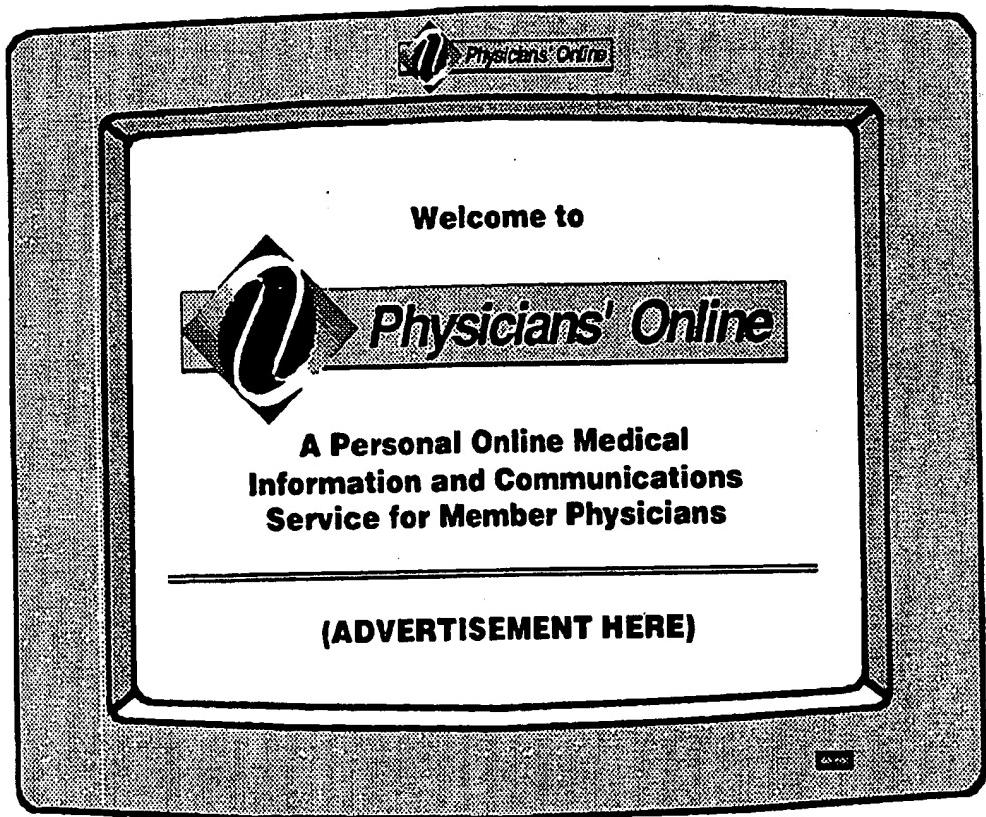
PHYSICIANS' ONLINE, Inc.
230 Park Avenue • #C-301 • New York • New York 10169
212/338-9343 | 212/724-2032 | Fax: 212/724-0849

"The success of managed care will probably depend on the ability of these organizations to influence physicians' choices in the direction of increased value."

-- John K. Iglehart. Managed Care. *N Engl J Med* 1992; 327: 742.

Welcome to

Physicians' Online

**A Personal Online Medical
Information and Communications
Service for Member Physicians**

(ADVERTISEMENT HERE)

I - The Executive Summary

Physicians' Online is a personalized online medical information and communications service dedicated to empowering physicians with the tools essential to advance the quality and control the cost of health care through informed decision-making.

Physicians' Online ("Company") is an innovative new electronic medium designed to evolve into a comprehensive national medical information and communications network servicing the entire health care industry. The Company's online information products and communication services provide physicians with powerful tools to manage Medical Knowledge, Prescriptions, and Patients. *Physicians' Online* provides a distribution outlet for third-party produced information products and services. *Physicians' Online* also provides valuable proprietary information services to other industry participants including managed care organizations and the pharmaceutical industry.

Phase I - Medical Knowledge Management

Online medical information and communication services which are readily accessible and free of charge to member physicians through optional online advertising support. The Company has assembled the most powerful, yet user-friendly, collection of medical information tools available from leading third-party sources. The core information products target three key areas of identified information need, including medical literature (MEDLINE), medical diagnosis (QMR), and drug information (USP). *Physicians' Online* is being developed in cooperation with major medical societies, pharmaceutical manufacturers & marketing organizations, hospitals, managed care organizations, and leading technology & third-party content providers.

Implementation: 1993 through 1994

Phase II - Prescription Management

Online prescription fulfillment and cost containment programs made possible through the use of "Smart Electronic Prescription Pads" (PDAs). This network is being developed in cooperation with managed care organizations, hospitals, pharmacists, pharmaceutical distributors, leading technology providers, and other health-care participants.

Implementation: 1994 through 1996

Phase III - Patient Management

Online patient information for efficient retrieval and transaction processing resulting in enhanced clinical and administrative efficiency and cost-containment. This network is being developed in cooperation with corporate employee benefits programs, private health insurance carriers, out-patient laboratories, electronic claims processors, installment credit organizations, hospitals, and other health care participants.

Implementation: 1995 through 1997

The Company's competitive advantage is based on its ability to attract physician use. Founded by practicing physicians with extensive experience delivering practical information products to busy clinicians, the Company has developed a market-driven product strategy designed to win maximum professional acceptance and use. The Company is establishing critical strategic alliances with leading participants in every major health care market segment. The Company is currently working with several leading content and service providers to develop new products and services for this expanding multi-billion dollar market opportunity.

CONFIDENTIAL

Physicians' Online: 5 Year Plan

*To empower physicians with the tools essential to advance the quality and
control the cost of health care through informed decision-making.*

	Phase I	Phase II	Phase III
Time Frame	0 - 2 yr	1 - 4 yr	3 - 5 yr
Essential Tools	Medical Knowledge Management	Prescription Management	Patient Management
Vehicle	Physicians' Online	Pharmacists' Online Pharm Reps' Online Formularies Online Managed Care Online	National Health Card Network
Potential Membership	500,000 physicians 10,000 pharmaceutical execs	300,000 physician offices 100,000 pharmacies 50,000 drug reps	250 million patients 10,000 hospitals other health care participants
Core Markets	MEDLINE Rx Micromarketing	Prescription Fulfillment Rx Cost-Containment	Patient Administration Cost-Containment Programs
Market Size	$50 million / $7 billion	>$70 billion	>$500 billion
Market Size/MD	$500 / $15,000	>$150,000	>$1,000,000
Secondary Markets	• Clinical Databases • Decision-Support Tools • News & Financial Services • Special Interest Forums • other areas of identified need	• Home Care • Managed Care • Formularies • Pharmacy Network • "Electronic Detailing" & Rep Support	• Electronic Patient Record • Outpatient Laboratory Transactions • Patient Health Maintenance
Main Revenue Sources	• Pharmaceutical Advertising • Pharmaceutical Micromarketing Information • Membership & Usage Fees	• Prescription Processing • Micromarketing Information • Membership & Usage Fees	• Patient Transaction Processing • Communication Services • Micromarketing Information • Membership & Usage Fees
Competitive Advantage	• "Medical Info Vending Machines" • Sophisticated MD Targeting ("Ad Wizard"/ "Smart Ads") • Installed Terminals, PDAs, & PCs • Computer-Sophisticated Members • Medical Society Support • Pharmaceutical Industry Support • Third-Party Office Systems Support • Pharmaceutical Executives' Online • User-Friendly Interface • Proprietary Text-Retrieval Software • Proprietary Psychometric Mktg Data	• "Smart Electronic Prescription Pads" (PDAs) • Installed Terminals, PDAs, & PCs • Automated Prescriber Assistance Programs • Proprietary managed care applications • National Electronic Formularies • Proprietary Prescriber Profiling • Patient Prescription Profiles • Proprietary Psychometric Marketing Data	• "National Health Card" • Installed-base of diverse POS/PON entry-points linking integral industry participants • Electronic Patient Transactions Network • Third-Party Office Systems Support • Hospital Systems Support • Cellular Communications link to Physicians
Strategic Alliances	• Medical & Professional Societies • Pharmaceutical Companies • Pharmaceutical Marketing Cos • Prescription Data Marketing Companies (IMS/ MMG/ PMS) • Third-party Content Providers (NLM/ Camdat/ USP) • Medical Office System Companies • Technology Providers (CompuServe/ Sybase/ Conquest/ Coconut/ Apple/ Sun/ HP/ Cube)	• Prescription Fulfillment Companies (Medco) • Pharmacies/Pharmacist Societies • Managed Care Organizations • HMOs/ PPOs/ IPAs • Hospital Chains • Hospital Formularies • Corp Employee Benefits Programs • Medical Office System Companies • Technology Providers (AT&T/ Apple/ EO/ Motorola/ HP)	• Corp Employee Benefits Programs • Private Health Insurance Carriers • BC/BS/Medicaid/ Medicare • Out-Patient Labs (MetPath/ BioScience/ SKF/ NHL) • Outpatient Testing Companies • Installment Credit Organizations • Electronic Claims Processing & Clearing Houses (NEIC/ EDS) • Medical Office & Hospital Systems Companies
Critical Technologies	• Systems Integration of existing hardware & software technology • Packet Data Network technology • Simple Text Retrieval Software • Third-party Content Development	• "Personal Digital Assistants" (PDAs) • Data network technology • Proprietary PDA applications development • Personal Info Management (PIM)	• Systems Integration • Proprietary patient administration & cost-containment applications development • Cellular data network technology
Infrastructure Milestones	• 150,000 physician members • 5,000 hospital members • 5,000 hospital-based terminals • 5,000 PDAs in Physician Offices • 150,000 additional POL software installations	• 300,000 physician members • 10,000 hospital members • 20,000 hospital-based terminals • 100,000 PDAs in Physician Offices • 10,000 mobile PDAs • 500,000 additional POL software installations	• 500,000 physician members • 10,000 hospital members 50,000 hospital-based terminals • 300,000 PDAs in Physician Offices • 400,000 mobile PDAs • 800,000 additional POL software installations
Infrastructure $	$10,000,000	$50,000,000	$250,000,000
Infrastruct$/ MD	$100	$200	$500

Physicians' Online

A personalized online medical information & communications service dedicated to empowering physicians with the tools essential to advance the quality and control the cost of health care through informed decision-making.

Physician as Knowledge Worker
Problem & Opportunity

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Info — PHYSICIAN — Rx
```

PCs in Health Care

**Desk-bound
Document Processing**

Barriers to Physician Use
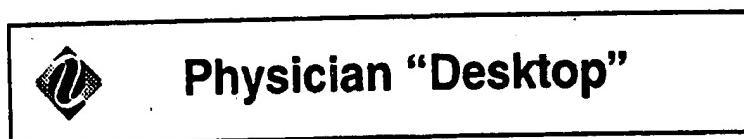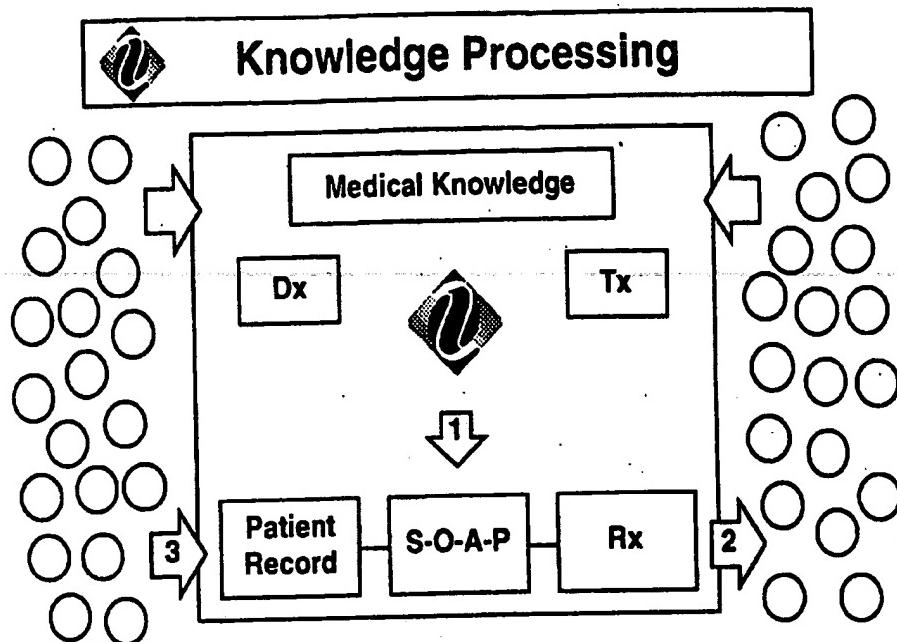
- **Price**
- **Access**
- **Ease of Use**
- **Awareness**
- **Time**

Knowledge Processing

Medical Knowledge

Dx

Tx

1

Patient
Record

S-O-A-P

Rx

3

2

Physician "Desktop"

**Desk-bound
Document Processing**

**Mobile
Knowledge Processing**

Physician Market Strategy

Phase I	Phase II	Phase III
Knowledge	Rx	Patient

Strategic Alliances

- **Phase by Phase**
  Sector by Sector Cooperative Participation

- **Cooperative vs Competitive**
  Market Growth vs Market Share

- **Physician "Desktop" Control**
  First Mover Advantage
  Physician Use: All or Nothing

Welcome to

Physicians' Online

A Personal Online Medical
Information and Communications
Service for Member Physicians

(ADVERTISEMENT HERE)

Phase II:
Facilitating the Shift to Managed Fulfillment
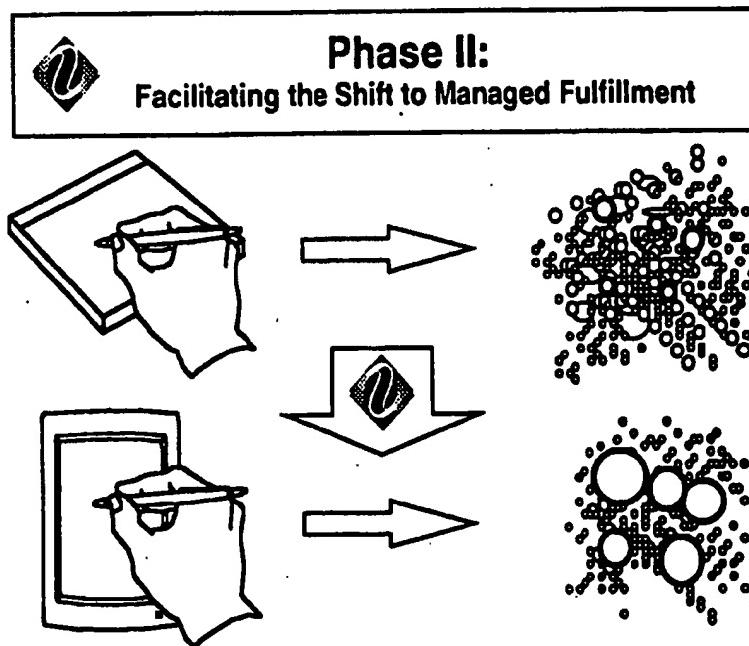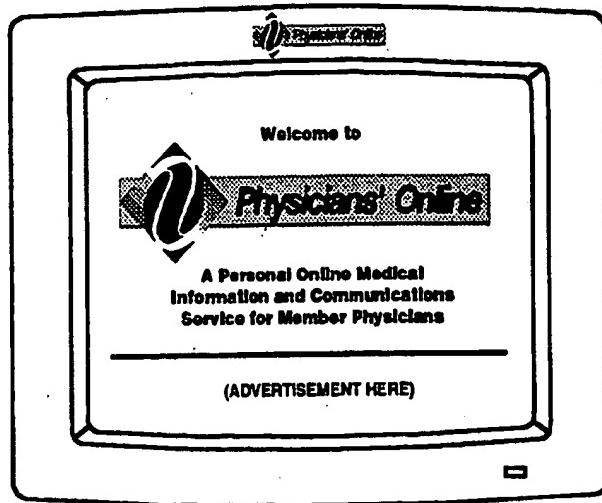
Keys to Success

- **Physician Membership & Use**
- **Market-driven not Technology-driven**
  - Systems Integrator of Existing & Leading Technology
  - "Physician-centric" Market Strategy
- **Integral Industry Participation**
- **"First-Mover" Advantage**
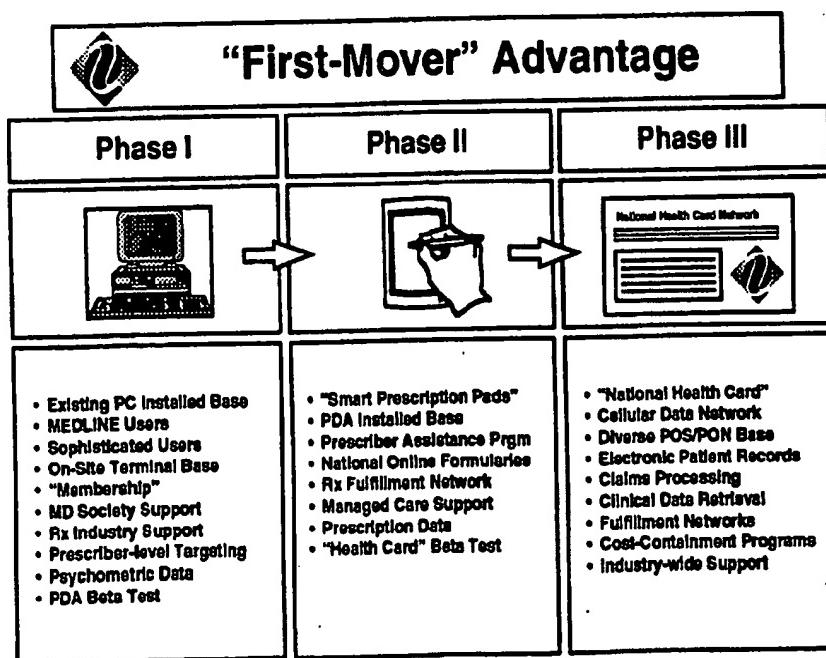
"First-Mover" Advantage

Phase I	Phase II	Phase III
• Existing PC Installed Base • MEDLINE Users • Sophisticated Users • On-Site Terminal Base • "Membership" • MD Society Support • Rx Industry Support • Prescriber-level Targeting • Psychometric Data • PDA Beta Test	• "Smart Prescription Pads" • PDA Installed Base • Prescriber Assistance Prgm • National Online Formularies • Rx Fulfillment Network • Managed Care Support • Prescription Data • "Health Card" Beta Test	• "National Health Card" • Cellular Data Network • Diverse POS/PON Base • Electronic Patient Records • Claims Processing • Clinical Data Retrieval • Fulfillment Networks • Cost-Containment Programs • Industry-wide Support

Physicians' Online

A personalized online medical information &
communications service dedicated to empowering
physicians with the tools essential to advance the
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Areas for Potential Collaboration

MEDCO:

"Smart Electronic Prescription Pads"

- Online Prescription Fulfillment
- Online Prescription Claims Processing
- Pharmacists' Online

Online Cost-Containment Programs

- Online Formularies
    - NATIONAL FORMULARY STANDARD
    - Formulary Management Programs

- Online "Prudent Prescriber" Programs
    - Personal Prescribing Profiles
    - Comparison with National Standards

MMG:

Physician Targeting

- "Smart" Ads / Ad Wizard
    - Prescriber Data Linkages
    - Context-Sensitive (Static / Dynamic)

- E-mail
- Single-Sponsor Services
- Special Programming

Proprietary Prescriber-level Data

- Psychometric
    - Interactive/Survey
    - Online Behavior Surveillance
        Ad Interactions
        Database Interations
        Concept Indexing

- Prescription Data

Detailing Support

- Rx Sampling Fulfillment
- Pharm Reps' Online
- Company Forums

EXHIBIT B

#1
meeting →

TUESDAY

APPOINTMENTS & SCHEDULED EVENTS

HRS.	NAME	PLACE	SUBJECT

9ᵃ ▓▓▓▓▓
▓▓▓ ▓▓▓▓

A. Lee

TO BE DONE TODAY (ACTION LIST)
A ~~call Lee to confirm 9pm mtg~~
~~call Bob Giles~~ →

EXPENSE & REIMBURSEMENT RECORD:

TUESDAY **30**

DIARY AND WORK RECORD

HRS.	NAME OR PROJECT	DESCRIPTION	TIME

8
9
10
11
12
1
2
3
4
5

meeting attendance (▓▓▓▓▓▓▓▓▓▓
— S▓▓▓▓▓G (POL) ▓▓▓▓
— I▓▓▓▓▓▓N (H▓▓▓)
— F▓▓▓▓▓R (H▓▓)
— H▓▓▓▓)

EXHIBIT C

Physicians' Online

Handout

Christian Mayaud, MD
Chief Executive Officer

Terrill Burnett
Chief Marketing Officer

THB 12195

"The success of managed care will probably depend on the ability ... to influence physicians' choices in the direction of increased value."

-- John K. Iglehart. Managed Care. *N Engl J Med* 1992: 327: 742.

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Implementation: 1993 through 1994

Phase II · Prescription Management

Online prescription fulfillment and cost containment programs made possible through the use of "Smart Electronic Prescription Pads" (PDAs). This network is being developed in cooperation with managed care organizations, hospitals, pharmacists, pharmaceutical distributors, leading technology providers, and other health-care participants.

Implementation: 1994 through 1996

Phase III · Patient Management

Online patient information for efficient retrieval and transaction processing resulting in enhanced clinical and administrative efficiency and cost-containment. This network is being developed in cooperation with corporate employee benefits programs, private health insurance carriers, out-patient laboratories, electronic claims processors, installment credit organizations, hospitals, and other health care participants.
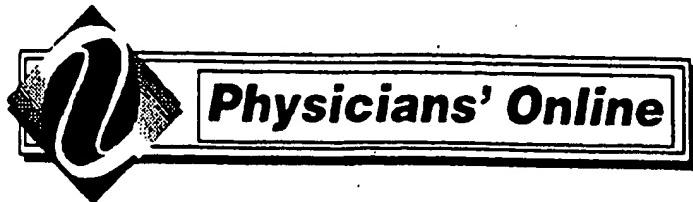
Implementation: 1995 through 1997

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Physicians' Online: 5 Year Plan

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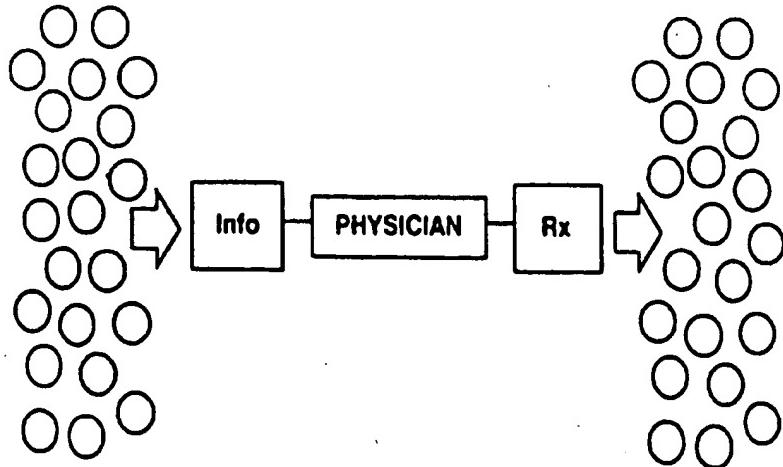
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Market Size/MD	$1000 / $15,000	>$150,000	>$1,000,000
Secondary Markets	• Clinical Databases • Decision-Support Tools • News & Financial Services • Special Interest Forums • other areas of identified need	• Home Care • Managed Care • Formularies • Pharmacy Network • "Electronic Detailing" & Rep Support	• Electronic Patient Record • Outpatient Laboratory Transactions • Patient Health Maintenance
Main Revenue Sources	• Pharmaceutical Advertising • Pharmaceutical Micromarketing Information • Membership & Usage Fees	• Prescription Processing • Micromarketing Information • Membership & Usage Fees	• Patient Transaction Processing • Communication Services • Micromarketing Information • Membership & Usage Fees
Competitive Advantage	• "Medical Info Vending Machines" • Sophisticated MD Targeting ("Ad Wizard"/ "Smart Ads") • Installed Terminals, PDAs, & PCs • Computer-Sophisticated Members • Medical Society Support • Pharmaceutical Industry Support • Third-Party Office Systems Support • Pharmaceutical Executives' Online • User-Friendly Interface • Proprietary Text-Retrieval Software • Proprietary Psychometric Mktg Data	• "Smart Electronic Prescription Pads" (PDAs) • Installed Terminals, PDAs, & PCs • Automated Prescriber Assistance Programs • Proprietary managed care applications • National Electronic Formularies • Proprietary Prescriber Profiling • Patient Prescription Profiles • Proprietary Psychometric Marketing Data	• "National Health Card" • Installed-base of diverse POS/PON entry-points linking integral industry participants • Electronic Patient Transactions Network • Third-Party Office Systems Support • Hospital Systems Support • Cellular Communications link to Physicians
Strategic Alliances	• Medical & Professional Societies • Pharmaceutical Companies • Pharmaceutical Marketing Cos • Prescription Data Marketing Companies (IMS/ MMG/ PMS) • Third-party Content Providers (NLM/ Camdat/ USP) • Medical Office System Companies • Technology Providers (CompuServe/ Sybase/ Conquest/ Coconut/ Apple/ Sun/ HP/ Cube)	• Prescription Fulfillment Companies (Medco) • Pharmacies/Pharmacist Societies • Managed Care Organizations • HMOs/ PPOs/ IPAs • Hospital Chains • Hospital Formularies • Corp Employee Benefits Programs • Medical Office System Companies • Technology Providers (AT&T/ Apple/ EO/ Motorola/ HP)	• Corp Employee Benefits Programs • Private Health Insurance Carriers • BC/BS/Medicaid/ Medicare • Out-Patient Labs (MetPath/ BioScience/ SKF/ NHL) • Outpatient Testing Companies • Installment Credit Organizations • Electronic Claims Processing & Clearing Houses (NEIC/ EDS) • Medical Office & Hospital Systems Companies
Critical Technologies	• Systems Integration of existing hardware & software technology • Packet Data Network technology • Simple Text Retrieval Software • Third-party Content Development	• "Personal Digital Assistants" (PDAs) • Data network technology • Proprietary PDA applications development • Personal Info Management (PIM)	• Systems Integration • Proprietary patient administration & cost-containment applications development • Cellular data network technology
Infrastructure Milestones	• 150,000 physician members • 5,000 hospital members • 5,000 hospital-based terminals • 5,000 PDAs in Physician Offices • 150,000 additional POL software installations	• 300,000 physician members • 10,000 hospital members • 20,000 hospital-based terminals • 100,000 PDAs in Physician Offices • 10,000 mobile PDAs • 500,000 additional POL software installations	• 500,000 physician members • 10,000 hospital members • 50,000 hospital-based terminals • 300,000 PDAs in Physician Offices • 400,000 mobile PDAs • 800,000 additional POL software installations
Infrastructure $	$10,000,000	$50,000,000	$250,000,000
Infrastruct$/ MD	$100	$200	$500

Physicians' Online

A personalized online medical information & communications service dedicated to empowering physicians with the tools essential to advance the quality and control the cost of health care through informed decision-making.

Physician as Knowledge Worker
Problem & Opportunity

Info → PHYSICIAN → Rx

PCs in Health Care

Barriers to Physician Use

**Desk-bound
Document Processing**

- Price
- Access
- Ease of Use
- Awareness
- Time

The Real Cost of Knowledge

- **Time**
  - Convenient Access
  - Ease of Use
- **Money**
  - Price

Minimize the Cost of Knowledge

THB 12201

Knowledge Processing

Medical Knowledge

Dx

Tx

1

Patient Record — S-O-A-P — Rx

3

2

Physician "Desktop"

**Desk-bound
Document Processing**

**Mobile
Knowledge Processing**

Physician "Desktop"

Points of Entry

Home	Office	Hospital
• PC • Smart Phone • PDA	• PDA • Smart Phone • PC • Office Network	• Dedicated Terminal • PC • Hospital Network • PDA • Smart Phone

Physician Market Strategy

Phase I	Phase II	Phase III
Knowledge	Rx	Patient

Strategic Alliances

- **Phase by Phase**
  Sector by Sector Cooperative Participation

- **Cooperative vs Competitive**
  Market Growth vs Market Share

- **Physician "Desktop" Control**
  First Mover Advantage
  Physician Use: "All or Nothing"

Phase II:
Facilitating the Shift to Managed Fulfillment

Keys to Success

- **Physician Membership & Use**
  - "Physician-centric" Market Strategy
    - *Minimize the Cost of Knowledge*
- **Market-driven not Technology-driven**
  - Systems Integrator of Existing & Leading Technology
- **Integral Industry Participation**
- **"First-Mover" Advantage**

THB 12205

⬧ "First-Mover" Advantage

Phase I	Phase II	Phase III
• Existing PC Installed Base • MEDLINE Users • Sophisticated Users • On-Site Terminal Base • "Membership" • MD Society Support • Rx Industry Support • Prescriber-level Targeting • Psychometric Data • PDA Beta Test	• "Smart Prescription Pads" • PDA Installed Base • Prescriber Assistance Prgm • National Online Formularies • Rx Fulfillment Network • Managed Care Support • Prescription Data • "Health Card" Beta Test	• "National Health Card" • Cellular Data Network • Diverse POS/PON Base • Electronic Patient Records • Claims Processing • Clinical Data Retrieval • Fulfillment Networks • Cost-Containment Programs • Industry-wide Support

⬧ Physicians' Online

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THB·12206

EXHIBIT D

Physicians' Online

████ Meeting

████████████

Handout

Christian Mayaud, MD
Chief Executive Officer

Terrill Burnett
Chief Marketing Officer

"The success of managed care will probably depend on the ability ... to influence physicians' choices in the direction of increased value."

-- John K. Iglehart. Managed Care. *N Engl J Med* 1992; 327: 742.

Welcome to

Physicians' Online

A Personal Online Medical
Information and Communications
Service for Member Physicians

(ADVERTISEMENT HERE)

I - The Executive Summary

Physicians' Online is a personalized online medical information and communications service dedicated to empowering physicians with the tools essential to advance the quality and control the cost of health care through informed decision-making.

Physicians' Online ("Company") is an innovative new electronic medium designed to evolve into a comprehensive national medical information and communications network servicing the entire health care industry. The Company's online information products and communication services provide physicians with powerful tools to manage Medical Knowledge, Prescriptions, and Patients. *Physicians' Online* provides a distribution outlet for third-party produced information products and services. *Physicians' Online* also provides valuable proprietary information services to other industry participants including managed care organizations and the pharmaceutical industry.

Phase I - Medical Knowledge Management

Online medical information and communication services which are readily accessible and free of charge to member physicians through optional online advertising support. The Company has assembled the most powerful, yet user-friendly, collection of medical information tools available from leading third-party sources. The core information products target three key areas of identified information need, including medical literature (MEDLINE), medical diagnosis (QMR), and drug information (USP). *Physicians' Online* is being developed in cooperation with major medical societies, pharmaceutical manufacturers & marketing organizations, hospitals, managed care organizations, and leading technology & third-party content providers.

Implementation: 1993 through 1994

Phase II - Prescription Management

Online prescription fulfillment and cost containment programs made possible through the use of "Smart Electronic Prescription Pads" (PDAs). This network is being developed in cooperation with managed care organizations, hospitals, pharmacists, pharmaceutical distributors, leading technology providers, and other health-care participants.

Implementation: 1994 through 1996

Phase III - Patient Management

Online patient information for efficient retrieval and transaction processing resulting in enhanced clinical and administrative efficiency and cost-containment. This network is being developed in cooperation with corporate employee benefits programs, private health insurance carriers, out-patient laboratories, electronic claims processors, installment credit organizations, hospitals, and other health care participants.

Implementation: 1995 through 1997

The Company's competitive advantage is based on its ability to attract physician use. Founded by practicing physicians with extensive experience delivering practical information products to busy clinicians, the Company has developed a market-driven product strategy designed to win maximum professional acceptance and use. The Company is establishing critical strategic alliances with leading participants in every major health care market segment. The Company is currently working with several leading content and service providers to develop new products and services for this expanding multi-billion dollar market opportunity.
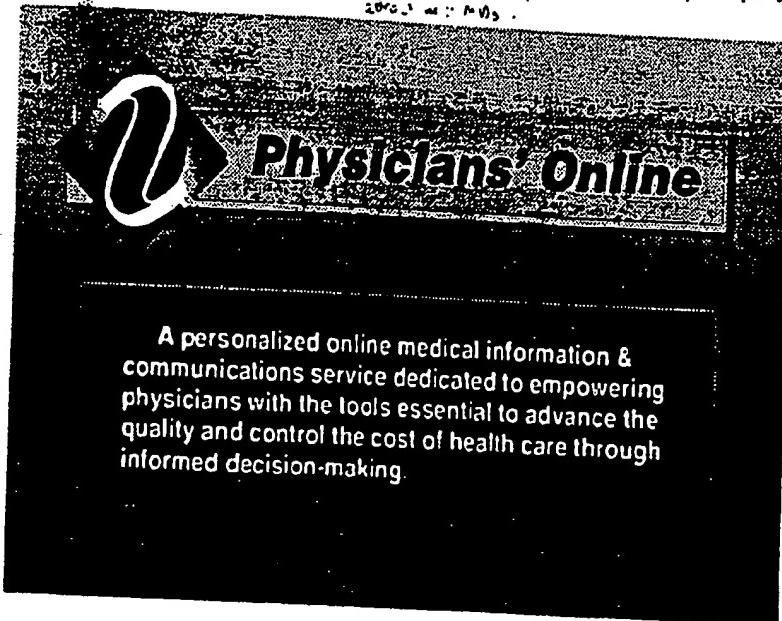
Physicians' Online: 5 Year Plan

To empower physicians with the tools essential to advance the quality and control the cost of health care through informed decision-making.

	Phase I	Phase II	Phase III
Time Frame / Expected Time	0 - 2 yr	1 - 4 yr	3 - 5 yr
Vehicle	Medical Knowledge Management — Physicians' Online	Prescription Management — Pharmacists' Online, Pharm Reps' Online, Formularies Online, Managed Care Online	Patient Management — National Health Card Network
Potential Membership	500,000 physicians; 10,000 pharmaceutical execs	300,000 physician offices; 100,000 pharmacies; 50,000 drug reps	250 million patients; 10,000 hospitals; other health care participants
Core Markets	MEDLINE; Rx Micromarketing	Prescription Fulfillment; Rx Cost-Containment	Patient Administration Cost-Containment Programs
Market Size	$50 million / $7 billion	>$70 billion	>$500 billion
Market Size/MD	$1000 / $15,000	>$150,000	>$1,000,000
Secondary Markets	• Clinical Databases • Decision-Support Tools • News & Financial Services • Special Interest Forums • other areas of identified need	• Home Care • Managed Care • Formularies • Pharmacy Network • "Electronic Detailing" & Rep Support	• Electronic Patient Record • Outpatient Laboratory Transactions • Patient Health Maintenance
Main Revenue Sources	• Pharmaceutical Advertising • Pharmaceutical Micromarketing Information • Membership & Usage Fees	• Prescription Processing • Micromarketing Information • Membership & Usage Fees	• Patient Transaction Processing • Communication Services • Micromarketing Information • Membership & Usage Fees
Competitive Advantage	• "Medical Info Vending Machines" • Sophisticated MD Targeting ("Ad Wizard"/ "Smart Ads") • Installed Terminals, PDAs, & PCs • Computer-Sophisticated Members • Medical Society Support • Pharmaceutical Industry Support • Third-Party Office Systems Support • Pharmaceutical Executives' Online • User-Friendly Interface • Proprietary Text-Retrieval Software • Proprietary Psychometric Mktg Data	• "Smart Electronic Prescription Pads" (PDAs) • Installed Terminals, PDAs, & PCs • Automated Prescriber Assistance Programs • Proprietary managed care applications • National Electronic Formularies • Proprietary Prescriber Profiling • Patient Prescription Profiles • Proprietary Psychometric Marketing Data	• "National Health Card" • Installed-base of diverse POS/PON entry-points linking integral industry participants • Electronic Patient Transactions Network • Third-Party Office Systems Support • Hospital Systems Support • Cellular Communications link to Physicians
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Infrastructure $	$10,000,000	$50,000,000	$250,000,000
Infrastructure/MD	$100	$200	$500

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Gatekeeper

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4

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5

Knowledge Processing

Medical Knowledge

Dx   Tx

Patient Record   S·O·A·P   Rx

6

Physician "Desktop"

Desk-bound
Document Processing

Mobile
Knowledge Processing

3 tasks

T_x = Treatment

MD value

Subjective
Objective
Assessment
Plan

Fulfillment Mgmt   Prescription
Therapy
Order writing

evolving

FLA

7

Physician "Desktop"

Points of Entry

Home	Office	Hospital
PC	PDA	Dedicated Terminal
Smart Phone	Smart Phone	PC
PDA	PC	Hospital Network
	Office Network	PDA
		Smart Phone
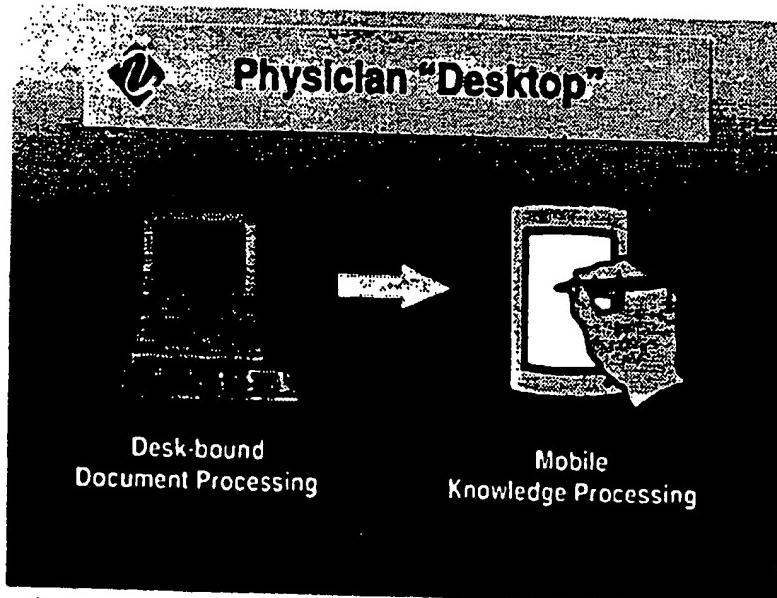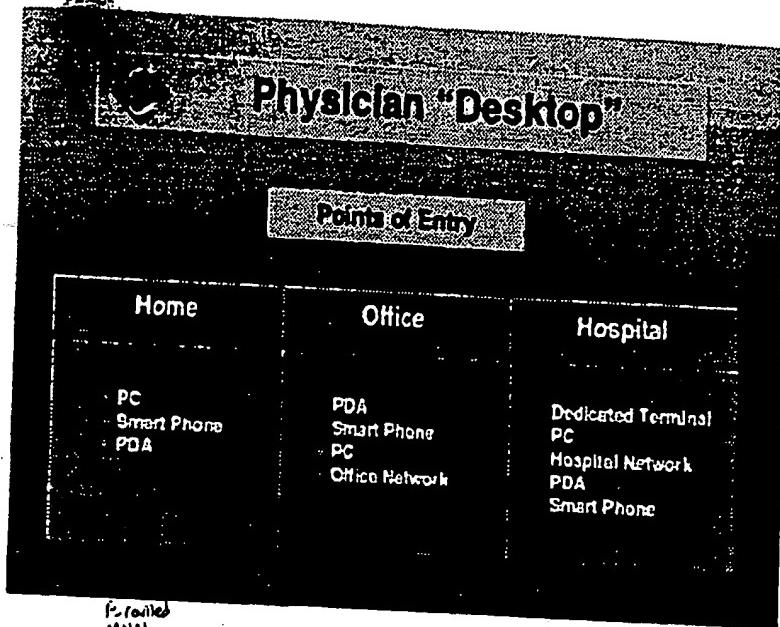
Evolving Desktop.
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How to get MDs
To use
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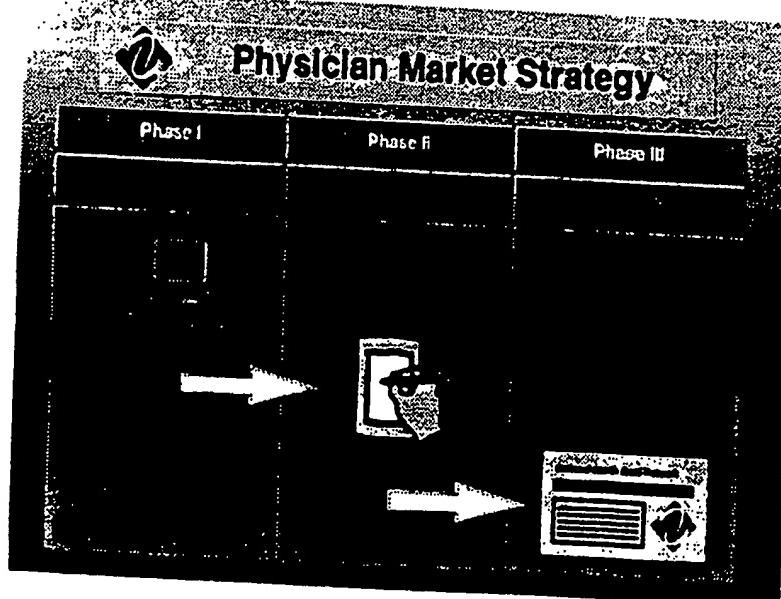
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Physician Market Strategy

Phase I	Phase II	Phase III

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Carad

Escard

Consvest

efficient network

Strategic Alliances

Phase by Phase
Sector by Sector Cooperative Participation

Cooperative vs Competitive
Market Growth vs Market Share

Physician "Desktop" Control
First Mover Advantage
Physician Use "All or Nothing"

10

context sensitive

Welcome to

Physicians Online

A Personal Online Medical
Information and Communications
Service for Member Physicians

(MESSAGE HERE)

11

SERVICE WORKSPACE

MESSAGE

⅛ screen.

12

Main Menu

MESSAGE HERE

new screen stot judes

Key to Success

Physician as Point of Purchase
- "Physician-centric" Market Strategy
  - Minimize the Cost of Knowledge

Build a Low-cost, High-quality Product
- Systems Integrator of Existing & Leading Technology

"First-Mover" Advantage

Phase I	Phase II	Phase III
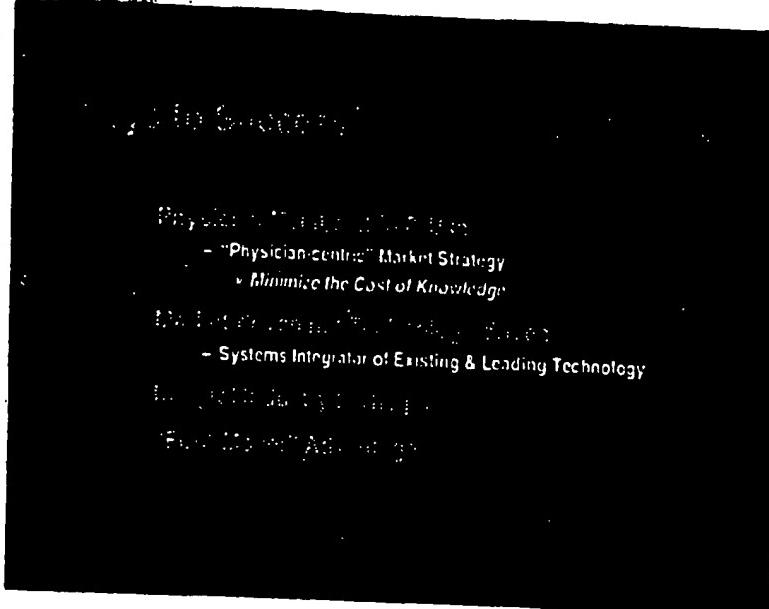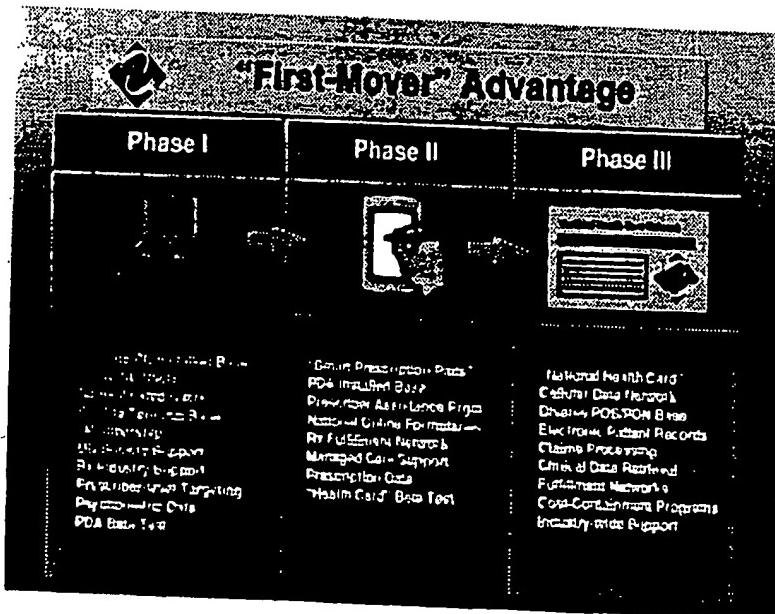
incedive, complete billing & payment
most effective in fulfilling all site views
who are NME's needs

THB 08072

EXHIBIT E

Physicians' Online

™

Business Summary

PHASE I

Medical Knowledge Management

CONFIDENTIAL

Christian Mayaud, MD
Chief Executive Officer

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Notice of Confidentiality & Disclaimers
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Physicians' Online is a trademark of Physicians' Online, Inc.

Table of Contents

"The success of managed care will probably depend on the ability ... to influence physicians' choices in the direction of increased value."

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II - The Concept

The Physician Need

Medical practice has always been information intensive. However, the explosive growth of medical knowledge has become a two-edged sword. While it provides physicians with the knowledge to guide their decision-making, it has become increasingly difficult to gain access to this unwieldy disorganized mass of rapidly growing information. The sheer volume of medical information today has far outstripped the capacity of traditional methods, such as medical libraries, textbooks, and journals, to meet the growing needs of today's physician.

Powerful computerized medical information tools have been developed to meet these needs. However, fundamental economic factors in health-care have inhibited their widespread use. The information products exist...the means of payment does not. Unlike the legal profession, the medical profession can not pass on the cost of information services to the health-care consumer due to the fixed reimbursement system. Computer systems that don't directly contribute to the bottom-line, are hard to justify for cash-strapped institutions and physicians who are facing a squeeze between falling reimbursements and rising costs.

The result:

(1) a progressive deterioration of physician expertise, and
(2) prolonged practice adoption delays of significant clinical advances.

Both trends are adversely effecting the quality of patient care.

The Pharmaceutical Industry Need

In 1991, $63 billion of prescriptions were written by less than half a million physicians -- over $150,000 per physician. Over $7 billion per year is spent by the pharmaceutical industry on sales and marketing -- over $15,000 per physician. In 1961, there were 656 drugs available by prescription in the US -- today there are over 8,000. This has created a marketing "din," as a plethora of products are vying for the limited attention of busy medical professionals.

Increasing competition, falling profit margins, and increasing marketing costs have created an acute need for more careful market segmentation and targeting of pharmaceutical marketing campaigns. Sophisticated pharmaceutical marketing support tools, based on prescription data, track the prescribing behavior of any targeted market segment down to the individual physician. With the proliferation of new marketing media designed to reach physicians, pharmaceutical companies increasingly use those that target their markets more selectively.

The Opportunity

To meet the information needs of physicians by providing them with powerful electronic information tools that are user-friendly and readily-accessible on a national computer network while simultaneously providing the pharmaceutical industry with powerful new micromarketing tools including online advertising and psychometric data.

The opportunity exists because --

The value of advertising to physicians exceeds the cost of providing them with computerized online information.

Physicians' Online

Physicians' Online is a personal online medical information & communications service for member physicians. Any medical professional who can legally write prescriptions qualifies for membership. *Physicians' Online* is available free-of-charge to any member who elects to accept the online advertising features. Otherwise, it is available at competitive online rates without advertising. *Physicians' Online* provides physicians with valuable medical information & communications services, on demand, at point-of-need, while simultaneously providing powerful marketing tools for the pharmaceutical industry.

Physicians' Online: The "Win-Win" Strategy

Physicians' Online is positioned to simultaneously meet the needs of multiple markets --

Physicians are provided with personalized online medical information & communications services on demand, at point-of-need, and free-of-charge. All the information products are high-quality, readily-accessible, easy-to-use, and free-of-charge. Online product messages are personalized to the needs of the individual physician.

Pharmaceutical companies are provided with a powerful, sophisticated, cost-effective, precisely-targetable, fully-accountable, non-coercive, risk-free, "Pay-per-View" advertising medium and a significant opportunity to generate goodwill.

Pharmaceutical marketing industry is provided with a new medium capable of precise physician targeting based on demographics as well as prescribing practices and a new source of proprietary psychometric data to enhance their micromarketing tools.

Medical Information Industry is provided with a high-volume platform to profitably distribute their products and services to physicians.

Medical Societies are provided with their own online Medical Society Forums and other benefits for their membership -- free-of-charge.

Medical center libraries are provided a source of MEDLINE and other information products and services -- free-of-charge.

Physicians' Online Positioning

Our Online Information Products & Services

To attract physician use, *Physicians' Online* has assembled the finest collection of online information products available from leading third-party medical information providers. Our core products target three key areas of identified information need --

- medical literature (MEDLINE),
- medical diagnosis (QMR), and
- drug information (USP Drug Info).

Unlike previous efforts to establish new advertiser-supported media, *Physicians' Online* does not have to "create a market" for new products and services. *Physicians' Online* delivers a well-known information product (MEDLINE) for free which physicians currently use more than 3 million hours per year (at fees ranging up to $45/hr).

Although "FREE MEDLINE" is the single most persuasive reason for physicians to switch to *Physicians' Online*, QMR (a medical diagnostic decision-support tool) and USP Drug Info (a comprehensive drug information resource) add significant clinical utility to our introductory offering. They cost relatively little to implement and they position *Physicians' Online* as a comprehensive "one-stop shopping" information resource for physicians. Although the demand for information products other than MEDLINE is currently small, we anticipate rapid growth in other online information products & services as physicians become more familiar with our system and routine *Physicians' Online* use becomes the *de facto* "Standard of Care."

Another significant incentive for physicians to use *Physicians' Online* regularly is that it keeps track of the online time spent on education activities. So, *Physicians' Online* becomes a significant source of Continuing Medical Education (CME) credit for active members. (CME

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credits are required for maintaining hospital admitting privileges, professional licensing, specialty certification, etc.)

The design of each module maximizes ease-of-use and relevance to clinical practice. Casual, as well as sophisticated, users quickly master the system using plain English commands. No steep learning curves or Byzantine commands to remember.

```
< 1 >   Literature Search (MEDLINE)
< 2 >   Diagnostic Support (QMR)
< 3 >   Drug Information (USP)
< 4 >   Society Forums (ACP/ AAFP/ ACC)
< 5 >   Special Interest Forums
< 6 >   Industry/Company Forums
< 7 >   Mail
< 8 >   Personal Services
< 9 >   Membership/Account Information
< 0 >   Quit
```

All online products and services are free-of-charge to member physicians who accept the online advertising option. If the advertising features are turned off, online products and services are competitively priced on a "Pay-as-You-Go" or "Fixed-Fee-for-Unlimited-Use" basis.

Comprehensive online communication services include --

- electronic mail,
- bulletin boards,
- special interest forums,
- special society boards,
- "live" conference rooms,
- libraries,
- paper specific comments boards,
- journal clubs,
- journal specific forums,
- electronic publications,
- personal clipping services,
- document delivery services,
- news & financial services,
- pharmaceutical customer support boards,
- member/alert features,
- FAX capabilities,
- software libraries,
- online customer support, and
- online documentation & help.

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Our Network

Our strategy maximizes physician use of electronic information resources by making them widely available, easy-to-use, and free-of-charge. By using a national data network with local access numbers, *Physicians' Online* can be accessed from any computer equipped with a modem using standard communications software or our own dedicated software.

Personal Computers   On-Site Terminals   Local Networks

Our Communications Software

Our software provides additional functionality and is distributed free-of-charge to all members. It has an easy-to-use, menu-driven, "Graphical-User-Interface" (GUI) and is compatible with all major computer operating systems – including DOS, Windows, Macintosh, and UNIX. It supports black & white and color graphics and provides mouse, as well as keyboard, control.

Our On-Site Terminals

Most clinical questions do not arise at a time or location convenient to computer access. The practice of medicine keeps physicians moving between offices, clinics, and various hospital locations throughout a typical day. This is why physicians require pagers to be reached. This is also why desk-bound computers haven't helped physicians with their daily work -- physicians don't work at their own desks! A physician's office computer is usually being used by staff for office management tasks. In the hospital, computers, when available, are dedicated to specific administrative tasks. The hospital library is often closed or not conveniently located and usually has only limited, if any, computerized information resources. And even if the physician has a home computer equipped with modem, communications software, and an online search account, the physician is often too tired and the question is no longer as pressing as it was during the day when the information was needed for clinical decision-making. No wonder less than 30% of the clinical questions that arise during patient care are ever answered.

Medical Information Vending Machines & Membership Kiosks

To increase physician use, *Physicians' Online* will distribute dedicated terminals to high volume sites -- such as emergency rooms, medical libraries, physician lounges, clinics, group practices. By facilitating access, at point-of-need, these workstations function as "medical information vending machines" and "membership kiosks" -- satisfying information appetites at strategic locations throughout the health-care environment and automatically recruiting new membership. Even physicians without personal computer systems can routinely access our system using these on-site terminals.

For example:

> A physician's daily routine can include a stop by the hospital-based terminal -- to get a few clinical questions answered on a problematic case, check the medical literature on a topic of interest, order a reprint, check his personal clipping service for new abstracts, check a patient's laboratory results, register for a conference, renew a medical society membership, check the latest travel immunization recommendations, pick up electronic mail, check out information on a new antibiotic, order drug samples, etc.

The 5,000 major US hospitals offer a total installed-base potential of over 20,000 terminals. In addition to direct distribution of terminals by *Physicians' Online*, pharmaceutical sponsors, using their hospital-based sales forces, have an opportunity to donate terminals (customized with their own marketing messages) to their client sites. A large installed-base of on-site terminals generates goodwill for pharmaceutical sponsors, creates a "strategic omnipresence," increases physician membership & total online demand, acts as a barrier to competition by gaining early control of the "Physician Desktop," and serves as entry points into our emerging health-care communications environment.

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Our Membership

Any medical professional who can legally write prescriptions qualifies for membership, including --

- physicians,
- physician assistants,
- physicians-in-training,
- osteopaths,
- podiatrists,
- oral surgeons, and
- dentists.

Members have an opportunity to use any information product on our system, entirely free-of-charge, by allowing online advertising to be shown. These ads are not intrusive or disruptive since they are restricted to the bottom 1/8 of the screen and change only four times per minute. Members can engage in online activities without any interruption from the advertising which is shown simultaneously.

Physicians can access *Physicians' Online* from any computer equipped with a modem and communications software or from any on-site terminal or personal computer equipped with our dedicated software. Physicians can order our free dedicated communications software package and low-cost modems directly from *Physicians' Online* using our 800 Membership Support Line or anytime they are online.

To become a member, physicians fill out an online membership questionnaire the first time they use the system. After completing the questionnaire, a unique membership number (their social security number) and a password are assigned to each physician. From then on, members merely type in their number and password and they have full access to the system.

Since each physician has his own membership number and data file, and each terminal has its own identifier number, the system always knows who is using the system, where he is, and what he is using the system for. This provides a unique opportunity for pharmaceutical advertisers to precisely target online advertising and collect psychometric marketing data. Member activity data also provides *Physicians' Online* with continuous feedback to constantly monitor and refine our ongoing marketing and product development efforts.

Our "Membership" Growth Strategy

Current MEDLINE users are a secure initial membership-base to grow from. As computer-sophisticated physicians, MEDLINE users are more likely to use other new information products & services. They are also "early adopters" of other new technologies and pharmaceuticals, and, as "Medical Opinion Leaders", they are influential with other physicians. MEDLINE users are usually internists, family practitioners, general practitioners, and cardiologists, which are the highest prescribing physician specialties.

Physicians' Online is dedicated to maintaining a quality medical information service with responsive membership support services. As our company name -- *Physicians' Online* -- implies, we want our members to feel they are "members" of an online information "service" that is really "theirs" and not just another "customer" of a medical information "company".

As we successfully convey this image to our initial membership and carefully nurture our member relations with quality products and support, our members will be our most potent marketing weapon -- recruiting new membership, leveraging our marketing into new clinical sites, and securing our market-share against future competition.

Ultimately, our success rests on the physicians' recognition that *Physicians' Online* is a quality information service that maintains the integrity of its information products and clearly separates the needs of physicians from the demands of pharmaceutical advertisers. Promotional information must

be clearly distinguished from all other information products. Information products can not be contaminated, in any way, by promotional material.

As a result --

- No exclusive covenants will be given to any pharmaceutical company that would compromise the integrity of our information products and our credibility to physicians.

- No exclusive advertising rights will be granted since this would create an opportunity for potential online competitors.

In summary, our basic strategy is to make physicians feel like "members" not "customers" and then to turn our "members" into "evangelists."

This is a powerful marketing strategy, and, for the physician market place, this may be the only strategy that can work. Physicians are a very fraternal order and expect to "belong." They are "members" of their medical profession, their subspecialty, their hospital attending staff, their medical society, their group practice, their medical school, their subspecialty, etc. Physicians will expect to be members of *Physicians' Online* – We can't disappoint them.

The Challenge of Sophisticated Users

The most important influence on physician behavior is "word of mouth." Physicians do very little without first consulting their colleagues, even informally. Nowhere is this more true than with computer technology. Physicians do not generally feel comfortable with computers. So, most physicians are keenly aware of which colleagues use computers and rely heavily on their "technical" advice. Before making any purchase, physicians generally consult these "computer savvy" colleagues first.

Computer-sophisticated physicians are the easiest group to get to use our system since they are always looking for new uses for their computers. And since these physicians tend to do MEDLINE literature searches themselves, they realize immediate savings by switching to *Physicians' Online*.

Although they are the "easiest-to-get-to-use" our system, they are also the "hardest-to-please" since they have an instant basis of comparison with the systems they are currently using. They will immediately run head-to-head comparison literature searches before making the switch. Therefore, we need the most sophisticated online system possible, right from the start, since our initial users are the most sophisticated physicians.

Since computer-savvy physicians are those most likely to use our system initially and they are also influential with the rest of the physician market, it is critical to the success of *Physicians' Online* to win their support early on. By winning their support, we have won the soundest membership base for growth and a bullet-proof barrier to any future competition.

This creates a potential risk during our launch phase. If we make any false claims, our users will know immediately. Anything short of the highest quality online system will disappoint and ultimately hurt us. We know that no system is perfect. All systems evolve over time. There are "bugs" and other performance problems that need to be fixed. How do we suspend their criticism and, better yet, get them to help us improve our system? *The Beta-Test Phase Membership Recruitment Program.*

Beta-Test Phase Membership Recruitment Program

By recruiting computer-sophisticated physician users for our beta-testing phase, we accomplish several key objectives --

- Convert the "hardest-to-please" physicians into "co-developers" of our system.

- Temper any initial criticism by calling our initial system a "beta-test version" and thereby allow us to work-out any initial bugs with an understanding group of sophisticated users.

- Make these "Beta-Testers" feel special and highly valued. Make them feel that their feed-back has a positive influence on the development of *Physicians' Online*. Eg., "Participate in the development of the most revolutionary advance in physician communications since the advent of the personal pager -- *Physicians' Online*."

- Obtain valuable last minute user-feedback for fine tuning our system before its "official" launch date.

- Leverage our future marketing by "seeding" the medical community with active computer-sophisticated members who form our initial membership-base and act as membership recruiters, clinical site administrators, and informal on-site technical support.

- Set a tone of close cooperation with our early membership. Developing a friendly and responsive membership / technical support service is the key step to win physicians' long-term loyalty and helps convert our members into *Physicians' Online* "Evangelists".

A prolonged beta-test phase allows us to get up to speed without becoming overwhelmed with the sudden increase in system utilization a "launch date" would create.

Although it will appear that only a limited number of beta-testers will be granted online privileges at this stage; in fact, there is no such limit. We will expand this program to rapidly capture most computer-sophisticated physicians.

Online Advertising

Physicians' Online provides member physicians with an optional "advertising shell" through which any third-party information product or communications service can be simultaneously distributed to them free-of-charge. Members are never interrupted by online advertising since it is restricted to the bottom 1/8 of the screen and changes only four times per minute.

As a "Pay-per-View" advertising medium, we are motivated to increase physician demand by making our system more useful and responsive to our members needs. In addition, third-party information providers are motivated to keep their online products useful to physicians since they are paid fees based on actual use.

In other words, "Pay-per-View" advertising enables *Physicians' Online* to remain responsive to the needs of physicians since the more physicians use our system, the more money we make. .

MEDLINE User Characteristics

Studies show that --

- The heaviest MEDLINE users are Internists (IM), Family Practitioners(FP), General Practitioners(GP), and Cardiologists. These physicians are also the heaviest prescribers -- writing over half the US prescriptions in 1991.
- Physicians who regularly use computers are "early adopters" of new products.
- MEDLINE users are "Medical Opinion Leaders" and influential with their peers.
- 70% of MEDLINE searches are run by physicians themselves -- another 25% are run for physicians by search intermediaries such as medical librarians, other physicians, medical students, etc.
- When using computerized information products in general, physicians spend 90% of their time using clinical information databases --
  - 65% MEDLINE
  - 30% drug information
- 60% of MEDLINE searches involve patient care.
- 50% of MEDLINE searches concern therapy.

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So, *Physicians' Online* advertising is displayed to influential, receptive, and high-prescribing physicians, staring at a computer screen, actively seeking therapeutic information – the most effective time to suggest a new treatment or remind them of an old treatment!

Transforming Advertising into Information: Linkages, Targeting, & "Smart" Ads

Online advertising can be targeted by any demographic characteristic down to the specific physician. Messages are targeted not only through "static demographic links" but also through dynamic and intelligent "context-sensitive links" and "prescribing-practices links."

> For example,
> > a cardiologist sees heart drug ads (static links) and if he is doing a literature search on depression, antidepressant drug ads (context-sensitive links) are also displayed.

When prescriber-level prescription data is linked to our membership profile data, *Physicians' Online* can also target advertising by prescribing behavior. *Physicians' Online* is the first medium to unleash the power of direct prescriber-level targeting.

Additionally, online advertising is linked to full drug disclosure information, including FDA required product information, USP drug information, relevant medical literature, and pharmaceutical detailing & fulfillment services. Ads can be reviewed and their links explored at any time. After reviewing ads, online activities are resumed right where the user left off.

Physicians see only relevant advertising, and pharmaceutical companies are only charged if their ads are actually viewed. Thus, *Physicians' Online* provides the pharmaceutical industry with a cost-effective, fully-accountable, non-coercive, risk-free, "Pay-per-View" medium that targets market segments down to specific prescribers, while simultaneously providing physicians with useful clinical information on demand, at point-of-need, and free-of-charge. The advertisements themselves become an additional source of useful information for physicians, since the advertising now relates to their individual practice needs and is not just another irrelevant distraction to endure.

Strategic Significance of "Optional" Advertising

Members are not required to view ads and can turn them off at any time. However, without the advertising option turned on, they assume the full cost of the information services provided. Also, non-prescription writing professionals, institutions, and the public-at-large may use the system at any time, without advertiser support, at rates competitive with other online information services.

Making online advertising "optional" is a subtle but strategically critical step to win the general acceptance of the medical profession. Physicians resent and resist using any product or service that requires them to view advertising. (Physician resistance to coercive advertising methods has been well-demonstrated by the failure of *Physician Computer Network* to achieve any significant market-share.) Making online advertising optional shifts the decision and responsibility to the individual physician. In other words, if online advertising is mandatory, physicians want to turn it off. If you make it optional, physicians will tend to leave it on. The availability of *Physicians' Online* without advertising also allows physicians to "save face."

Also, "Optional" advertising allows medical societies to endorse *Physicians' Online* without implying any endorsement for online advertising. The choice to view advertising is left to the individual physician.

Our Technology

MEDLINE Search Interface

Physicians' Online has made "Search Interface Design" a strategic priority since the vast majority of physicians are not computer-sophisticated. Even experienced physician-users can be mislead by their own literature searches. Studies show that with the current generation of MEDLINE search systems, search quality relates to the degree of user-experience with the given retrieval system -- with trained medical librarians consistently out-performing even the most experienced physicians. It is this "user-dependent search quality" that text-retrieval systems must address first, before physicians can reliably relinquish their dependence on MEDLINE search intermediaries such as medical librarians.

By using the most advanced text-retrieval technology available, our simple English MEDLINE search interface enables even novices to perform better searches than most "text-retrieval experts" can using other systems. *Physicians' Online* is co-developing the most sophisticated, yet easy-to-use, online MEDLINE search interface available, under an exclusive agreement with ConQuest Software Technologies, Inc., a leader in advanced text-retrieval software, using their patented text-retrieval technology. By integrating well-demonstrated advances in Natural Language Processing (NLP) and Concept Indexing (CI), *Physicians' Online* has the most powerful, yet easy to master, search interface available.

This technology allows both novice and sophisticated physician-users to query MEDLINE, and other online databases, using standard English sentences instead of having to construct complex Boolean search strategies required by other search systems. All a physician has to do is type a question in plain English. The sentence is analyzed for its key concepts, a search strategy is constructed, and then all the relevant abstracts are retrieved from the database. The retrieved abstracts are then ranked in terms of relevance to the initial query. This process results in the most relevant and complete literature search possible with little variability in search quality between experienced and inexperienced users.

For physicians who feel more comfortable doing literature searching "the old-fashioned way," standard Boolean search methods are also fully supported.

Communications Software

Physicians' Online has taken the best features of existing online systems and combined them into a comprehensive online system which is easy-to-use, menu-driven, and can be accessed by any computer using standard communications software or our dedicated software package. Our online system software is being developed by Sybase, Inc. and Coconut Computing, Inc. (developers of the leading graphical online Bulletin Board System (BBS) -- COCONET).

Central Computer System Design

The company's computer system exploits the latest advances in SQL Client/Server technology on a distributed UNIX-based workstation network. Software enhancements and new product modules are developed and implemented incrementally. As the demand for online services grows, computer hardware is added incrementally to increase capacity and preserve system performance .

By using these state-of-the-art technologies, *Physicians' Online* has the most advanced yet easy-to-use online text retrieval system and communications network. *Physicians' Online* delivers information more cost-effectively and with higher performance and quality than any

other existing online service which relies on older mainframe-based technology, awkward
and time-consuming Boolean search methods, and clumsy user interfaces.

System Software: Modular Design Philosophy

System software requirements are sorted into functional modules which are designed to
integrate seamlessly on a UNIX platform. Modular design allows for rapid and incremental
implementation of system features and information products by various independent
development teams and vendors.

SYSTEM SOFTWARE OVERVIEW

Phase II Technology:

Personal Digital Assistants as "Smart Electronic Prescription Pads"

To increase points-of-entry into our integrated electronic information and communications environment and to maintain control of the physicians' "Electronic Desktop," *Physicians' Online* will rely on an emerging new class of electronic devices known as "Personal Digital Assistants" (PDAs). PDAs are small, handheld electronic devices that intelligently assist users in capturing, retrieving, organizing, and communicating information and ideas -- exactly how physicians spend most of their time. These devices will enable *Physicians' Online* to expand physician demand for our online services through convenient mobile access and to facilitate the implementation of our Phase II Prescription Management System.

Made possible through the convergence of numerous digital and telecommunications technologies and the ability to miniaturize electronic devices, first generation PDAs, such as Apple's Newton, are positioned as low-cost pocket-sized electronic notebooks equipped with unique user-interfaces, Personal Information Management (PIM) software, and built-in access to both telephone and cellular data networks. Using pen-based operating systems, PDAs can understand handwritten commands and can be used for freeform notetaking, drawing, calculating, scheduling, list making, and communicating. Built-in telephone and cellular communications provide easy mobile access to online information and communications services and allow remote sending and receiving of faxes and other electronic documents.

Although the future of PDAs lies in true "wireless" communications, cellular data network technology, standards, and infrastructure are not yet adequate to support a national health care information and communications network. In the meantime, using standard telephone data network technology, *Physicians' Online* will introduce specially configured PDAs to be placed next to physicians' telephones. These PDAs act as *Physicians' Online* terminals and "Smart Electronic Prescription Pads."

By seamlessly integrating all the information relevant to making informed therapeutic decisions (including relevant formularies, price lists, drug information, and potential drug interactions) at the "point-of-sale," our "Smart Electronic Prescription Pads" and personalized prescription management software intelligently automate the prescription-writing, tracking, and fulfillment process to facilitate cost-effective therapeutic decision-making. As full-featured communication terminals, our PDA can access all of our other online information products and services as well.

Using PDAs, *Physicians' Online* will revolutionize medical practice by offering up-to-date online information and other network services to physicians on-demand anytime anywhere. *Physicians' Online* is well-positioned to market these devices to the medical profession. The current generation of pocket computers are merely toys for gadget-minded physicians who use them for electronic scheduling and phone books. But with a remote communications link to *Physicians' Online*, PDAs have universal appeal as complete clinical workstations. As personal remote terminals, they will even obviate the use of medical pager systems. When bundled with Personalized Information Management (PIM) software for physicians, our powerful online clinical tools will become a "Standard of Care" and a powerful membership incentive.

IV - The Market Strategy

The Key to Failure

Previous efforts to develop pharmaceutical-supported electronic information networks for physicians (e.g., Fisher-Stevens' PHYCOM, *Physician Computer Network* (PCN), and the soon-to-be-unveiled Whittle Communications' *Medical News Network* (MNN)) all appear to suffer from their lack of insight into the unique information needs of physicians. While these efforts have excelled at raising pharmaceutical advertising commitments, they have failed to win any significant physician following. Their existence is based on the acute marketing needs of the pharmaceutical industry rather than any solid information product design or implementation program.

This is hardly surprising, since these services were all conceived by advertising & marketing executives, not by physicians. Their founders were well-positioned to recognize and satisfy true pharmaceutical marketing needs, but not to recognize and satisfy true physician needs. The unique needs of physicians appear to have taken a back seat to the needs of pharmaceutical companies. A successful advertising vehicle needs an audience, not just advertisers. This disregard for the physician has lead them to a costly strategy of "creating a market" for products & services that serve non-existent physician needs.

The Key to Success

Physicians' Online is a powerful and sophisticated information & communications service designed <u>by physicians</u> for physicians.

Physicians' Online was founded by a physician who established a hospital-based electronic medical information center and observed first-hand how physicians actually use electronic information resources in the clinical setting. Real information needs of physicians were identified and served by providing convenient in-hospital access to high-quality information products.

The three types of information products used most by physicians are --

      (1) medical literature databases,
      (2) diagnostic decision-support programs, and
      (3) drug information databases.

Five key barriers limiting computerized information use by physicians are --

- high cost,
- lack of convenient access,
- steep learning curve,
- lack of physician awareness, and
- lack of physician time.

Physicians' Online addresses these barriers by -- making the service entirely free-of-charge; improving access through strategic placement of on-site terminals; making *Physicians' Online* easy-to-use with a menu-driven Graphical-User-Interface and simple English search commands; increasing physician-awareness through publicity, advertising, on-site terminals, pharmaceutical company co-marketing, and medical society sponsorship; and decreasing the time required to use these resources by increasing their performance and making their access conveniently available at points-of-need in the clinical environment.

Strategies to Overcome Utilization Barriers

Barrier	Strategy
Price	• FREE
Convenient Access	• "Information Vending Machines" • Communications Software / Hardware
Ease of Use	• User-Friendly Menu-Driven GUI • Simple English Search Interface • Customer Support
Physician Awareness	• Publicity • Medical Society Sponsorship • Member Evangelism • Advertising • Telemarketing • Direct Mail • Co-marketing
Physician Time	• Maximize Utility • Maximize Convenience • Personal CME Credit log • Become the "Standard of Care"

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<u>Offer a Well-known Information Product with Established Physician Demand – MEDLINE</u>

Unlike previous efforts, *Physicians' Online* does not have to "create a market" for new products and services. *Physicians' Online* starts by delivering a well-known information product (MEDLINE) to physicians, free-of-charge, using standard online information service technology. It is so well-known to physicians that "MEDLINE Search" is synonymous with "Literature Search." MEDLINE is the electronic information product used most by physicians today.

> We don't have to "create our market" – it already exists. Currently, physicians use MEDLINE about 3,000,000 hours per year.

Our physician-oriented market strategy centers on capturing an important -share of this existing physician demand as well as significantly expanding total demand through our "Strategies to Overcome Utilization Barriers," as outlined above. By tapping into this large and established physician demand for MEDLINE, *Physicians' Online* quickly builds sufficient system demand and, therefore, online advertising revenue, to generate positive cash-flow and establish *Physicians' Online* as a routine part of patient care. Having secured this stable MEDLINE customer-base, we will build a comprehensive national medical information & communications service by incrementally introducing additional products and services.

The Risks

> Our implementation plan minimizes investor risk while maximizing the growth potential of *Physicians' Online*.

Product development risk is minimized by using established technology from leading third-party software developers, information providers, and systems integrators. Modular software design enables independent development teams and vendors to rapidly design and implement system features and products. These modules are integrated incrementally on a reliable high-speed computer platform running UNIX. Information products are licensed from third-party providers who are paid based on actual physician use. The information providers are responsible for maintaining their own online products.

Physician marketing risk is minimized by initially targeting the MEDLINE market. By offering the best version of MEDLINE, free-of-charge (while other services charge $18 to $45 per hour), we not only capture the bulk of this market but significantly increase its total demand by increasing both the number of users and individual usage. With a current physician demand of about 3 million hours per year, positive cash-flow is achieved with only 15 - 20% market-share for this single product. Publicity during the beta-testing stage further leverages our physician marketing efforts. We win medical society sponsorship by recruiting these groups to serve on our Medical Society Advisory Board and by creating society-specific forums on *Physicians' Online* that are maintained free-of-charge. The American College of Physicians (ACP) (60,000 members), the American Academy of Family Physicians (AAFP) (70,000 members), and the American College of Cardiology (ACC) (28,000 members) are our initial targets. These societies represent physician specialties with the highest prescribing rates -- together, these physicians account for over half of all US prescription sales.

Pharmaceutical marketing risk is minimized by securing online advertising commitments before making the service available to physicians nationally. Fortunately, *Physicians' Online* does not have to "create a market" for online pharmaceutical advertising either. *Physician Computer Network* and *Medical News Network* have already demonstrated such a market exists. We have identified potential allies who service the micromarketing needs of the pharmaceutical industry. *Physicians' Online* provides a medium which naturally complements their micromarketing services by providing true physician-level targeting as well as a new source of prescriber-level psychometric data. During our product development phase, we are recruiting five pharmaceutical companies to serve on the Pharmaceutical Advisory Board. As initial sponsors, they gain substantial goodwill from the publicity

generated and are given special co-marketing opportunities such as putting their message on each terminal or software start-up screen and getting a time-limited exclusive right to distribute on-site terminals through their hospital-based sales forces. They also have influence on our system development and a head start on the learning curve of a significant new marketing medium.

Competitive risk is minimized by keeping the development stage secret, launching an aggressive and pre-emptive "first-strike" market strategy to gain early market-share (control of the "Physician Desktop"), and retaining that market-share through our dedication to membership/customer service, our large installed-base of dedicated on-site terminals, and medical society sponsorship. Our launch strategy leverages our pre-emptive "First-Mover Advantage" over potential competitors. Control of the "Physician Desktop" creates a significant barrier to potential competition. And, as a comprehensive national medical information & communications network dedicated to the needs of physicians, readily accessible, easy-to-use, and free-of-charge, *Physicians' Online* presents a formidable barrier to potential competition.

Our Competition

The introduction of *Physicians' Online* has a significant impact on five distinct groups --

>   I   MEDLINE Providers,
>   II   Consumer Online Services,
>   III Medical Online Services,
>   IV   Pharmaceutical Marketing Media
>   V   Pharmaceutical Micromarketing Industry

Our future is largely dependent on how effectively we anticipate and pre-empt competitive responses and our ability to establish symbiotic relationships.

I - MEDLINE Providers

MEDLINE is an information product created and maintained by the National Library of Medicine (NLM). NLM's mission is to improve patient care by having MEDLINE widely used by physicians. Although access to MEDLINE is provided via NLM's own network (MEDLARS) and dedicated communications software (Grateful MED), NLM also licenses MEDLINE to commercial online networks, CD-ROM distributors, and private institution-based networks.

The five major commercial online providers include --

> - *Maxwell Online* (BRS Information Technologies),
> - *PaperChase* (Beth Israel Hospital),
> - *Dialog/Knowledge Index* (Knight-Ridder),
> - *Medis* (Mead Data Central), and
> - *US HealthLink*.

MEDLINE is also available from several CD-ROM distributors including --

> - Aries Systems,
> - SilverPlatter,
> - Dialog,
> - BRS,
> - Cambridge,
> - EBSCO,
> - and others.

<u>Current vs Potential MEDLINE Market Size</u>

Since the NLM is not authorized to release the breakdown figures of licensing fees paid by private information vendors, the total MEDLINE market size must be estimated.

> In 1991, NLM collected MEDLINE licensing fees for a total of 876,000 online hours from commercial networks. NLM's own system provided an additional 324,000 hours of MEDLINE service, but since most physicians use Grateful Med software when they use the NLM's system (which reduces online "connect" time to 1/4 of the total time spent doing a search), the NLM really provided over 1,000,000 hours of online MEDLINE. 3729 CD-ROMs were sold domestically in 1991. We estimate these CD-ROM systems contributed at least another 500,000 hours of MEDLINE use. NLM also provides unlimited-use site licenses to a few institutions, so it is not possible to estimate their contribution to total MEDLINE demand.

Since most MEDLINE searching is done either by physicians themselves (70%) or for physicians by librarians (25%), we know the total physician demand for MEDLINE in 1991 was around 3,000,000 hours. Commercial online systems charge $18 to $45 per hour and CD-ROM systems cost from $700 to $3000 per year. So the total MEDLINE revenue collected in 1991 was somewhere between $35 and $45 million.

MEDLINE Market Size

	Current	Potential
Physicians using MEDLINE	50,000	>500,000
Physicians with personal online search accounts	35,000	>500,000
% Searches done by physicians themselves	70%	100%
Total MEDLINE use (hr/yr)	3,000,000	>10,000,000

As discussed earlier, several factors limit the use of information resources by physicians including -- cost, ease of use, accessibility, physician time, and physician awareness. These are the same barriers that limit MEDLINE use. The gradual erosion of these barriers has lead to a steady growth in MEDLINE use and physicians are doing more of their own literature searching. Medical schools and hospital training programs are now required by certifying boards and credentialing committees to make computerized literature searching available on-site.

Current Growth in MEDLINE Use

The NLM has issued 31,000 search accounts to physicians as of April, 1992. Growth rates in MEDLINE use can be estimated by examining the number of searches performed on NLM's system by year. Note the accelerating annual growth rate in MEDLINE use -- from 11% in 1989 to 33% in 1991. This trend suggests that *Physicians' Online* will facilitate MEDLINE growth on top of a pre-existing growth spurt.

MEDLINE Searches by Year

(NLM system only)

(% = annual growth)

Year	Searches	Annual growth
1989	~1,800,000	11%
1990	~2,050,000	16%
1991	~2,750,000	33%

MEDLINE Market Segments

Segment	Description	# MD	% MD
1	Physicians currently using MEDLINE themselves.	50,000	8 %
2	Physicians currently using MEDLINE search intermediaries.	50,000	8 %
3	Physicians not using MEDLINE but have access to computers.	150,000	25 %
4	Remaining high-priority physicians as identified by the pharmaceutical industry.	50,000	8 %
5	Remaining physicians.	300,000	50 %

Each MEDLINE market segment differs in terms of its computer-sophistication, previous exposure to MEDLINE, and ability to use MEDLINE and other computerized information resources in medical practice. A different approach is needed to market to each segment. These marketing issues, as well as other ways to segment our physician market, are addressed in detail in our *Physician Marketing Plan*.

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Online Pricing Strategy and MEDLINE Demand

In the consumer online services industry, total market size can be measured in terms of total online hours. However, total online hours are really created by the number of users and their individual usage rates.

For online systems, there are basically three approaches to pricing --

- Pay-as-You-Go (or Fee-Per-Use),
- Fixed-Fee-for-Unlimited-Use, and
- Free with Advertising Support.

"Pay-as-You-Go" is a constant disincentive to any user. The clock is constantly running up the fee. To minimize expense, individuals try to limit online time by careful planning before getting online or using programs that automate online activities through pre-processing (CompuServe's *Navigator* and NLM's *Grateful MED* are two examples). This pricing method is a constant drag on a growing market.

"Fixed-Fee" strategies are designed to attract high-volume users (market-share), not increase the total number of users. The fixed-fee pricing remains a barrier to casual users, but for established high-volume users, the savings are obvious. Users are now free to work online without the pressure of a running up a large bill. On one hand, total market size is increased in terms of increased total use. One the other hand, total revenues are depressed and the number of new users hasn't increased.

"Free" strategies which link online service to other revenue sources such as advertising do the most to increase total market size by both increasing the use per user and the number of users. All high-volume users start as casual users. Once price is removed as a barrier, then the underlying utility of the service becomes the major force limiting its utilization.

Alternative Online Pricing Strategies

Pricing	Individual Use	Number of Users	Total Demand
Pay as You Go	↓	↓	↓
Fixed Fee	↑	↓	↔
Free with Advertising	↑	↑	↑

Clearly, there is enormous growth potential for MEDLINE use by physicians. As noted previously, the gradual erosion of several key barriers are contributing to the current growth. In the past, usage fees have been the major factor limiting MEDLINE growth. As with other online systems, the same pricing issues apply to the MEDLINE market. While there is still tremendous growth opportunity in the MEDLINE market, both in terms of individual use and number of users, current MEDLINE providers are competing over existing high-volume users through price-cutting without increasing the number of causal users. So at a time when MEDLINE use is taking off, total MEDLINE revenues are actually falling. By offering MEDLINE for free, *Physicians' Online* will capture most of the existing MEDLINE users as well as create an expanded market by converting non-users into users.

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The Vulnerability of Online MEDLINE Providers

Online MEDLINE Source Comparison

ONLINE SERVICE	SEARCH PERFORMANCE		USER INTERFACE	PRICE	VALUE
	Speed	Quality	Ease of Use		Perform/Price
MedLars	XXX	XXX	X	$$$$	X
Grateful Med	X	XXX	XXXX	$$	XXX
BRS	XXX	XXX	XXX	$$$	XX
PaperChase	XXX	XXX	XXX	$$$	XX
Dialog	XXX	XXX	XX	$$$$	X
Medis	XXX	XXX	XX	$$$	XX
US Healthlink	XX	XX	XXX	$$	XX
Physicians' Online	**XXX**	**XXXX**	**XXXXX**	**FREE**	**XXXXXX**

Without pharmaceutical advertiser support or technical advantage, only a loss-leader coupling of MEDLINE to other online products or services can effectively compete with *Physicians' Online*. However, since MEDLINE is currently over 70% of the demand for these services, it is unlikely that any other product or service could generate sufficient revenue to support this approach.

Medical Online Services Comparison

PRICE/VALUE Comparison

AMANET · Dialog · Medis · BRS · MEDLARS · PaperChase · Grateful Med · US Healthlink · **Physicians' Online**

Negative Performance / *Positive Performance*

Price

Value

The Vulnerability of CD-ROM MEDLINE Providers

MEDLINE Source Comparison: Online vs CD-ROM

MEDLINE Source	NO Start Up Fees	NO Expensive Equipment	NO Fee Per Use	NO Subscription Fees	Current Automatic Updates
ONLINE	✓	✓		✓	✓
CD-ROM			✓		
Physicians' Online	✓	✓	✓	✓	✓

The CD-ROM MEDLINE market exists only because of the expense of online systems. CD-ROM systems require substantial initial hardware expense and ongoing expense for subscription updates. However, these expenses are fixed and not related to usage so they offer the most savings to high-volume MEDLINE users. Online systems have lower start-up costs and higher per use fees, so online systems offer lower overall cost to low-volume users. CD-ROM systems tend to be most cost-effective for institutions while online systems tend to be most cost-effective for individuals.

In recognition of this fact, CD-ROM vendors have sought to differentiate themselves with other value-added features such as text-retrieval performance, ease-of-use, and Graphical-User-Interfaces. However, by eliminating the cost of MEDLINE and adding our sophisticated, yet easy-to-use, graphical search interface, *Physicians' Online* eliminates the CD-ROM's main competitive advantages over online systems. MEDLINE will have to be bundled as a loss-leader with other CD-ROM products in order to remain competitive. Again, lack of demand for these other products makes this a nonviable option. Only some institutional sites and heavy-users with substantial investments in existing hardware and software will remain a possible CD-ROM MEDLINE market.

NLM vs Physicians' Online

NLM is not ultimately threatened by *Physicians' Online* since our missions are complementary -- to increase total MEDLINE use. By making MEDLINE readily accessible, easy-to-use, and free-of-charge, we significantly increase the total MEDLINE market size and the NLM shares in our success with increased total licensing revenue.

Summary

Clearly, *Physicians' Online* presents the most immediate threat to commercial MEDLINE vendors. We effectively challenge these current products based on the high-quality of our MEDLINE product, with its simple, yet sophisticated, search interface and its price (FREE). Our user-friendly graphical PC software, additional online products & services, and our dedicated on-site terminals further leverage our competitive position and create additional barriers to protect our share of the "Physician Desktop."

We have a clear "First-Mover Advantage" by having a pharmaceutical advertising support mechanism in place as well as a technical development lead time. Our technical lead time is further preserved by our exclusive software development arrangement with ConQuest Software Technologies. ConQuest is the current technical leader in the text-retrieval market. Their sophisticated text-retrieval software out-performs all traditional Boolean systems and they have a technical lead time over rival text-retrieval systems of 2 to 3 years with their patented software technology.

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II - Consumer Online Services

The Big Three

The consumer online services market is both emerging and highly competitive. What was once a relatively fragmented industry has coalesced into an industry made up of three large, mass-market information services. The "Big Three" include *Prodigy, CompuServe,* and *America Online.* Each has hundreds of thousands of individual subscribers and draws their substance from hundreds of information providers and distributors.

America Online, although the smallest of the three, is the clear technical leader. It has a sophisticated and easy-to-use Graphical-User-Interface (GUI) which is mouse and menu driven and which runs smoothly on Windows, Macintosh, and DOS. *Prodigy* and *CompuServe* are both developing similar interfaces to compete with *America Online.*

Consumer Online Market Share

(membership estimates for 1992)

Source: Alex. Brown

Mass Market vs Niche Market Strategies

Following a traditional "publishing" business model, the Big Three offer a wide variety of low-value/low-cost information products designed to capture the widest range of users possible. Marketing strategies are directed toward increasing both market-share and market size (increasing both the number of users and their individual use).

While the Big Three are battling over the emerging mass-market, other online services (such as Dialog, Delphi, Lexis, BRS, PaperChase, Newsnet, Dow Jones) are quietly capturing niche professional markets. These services offer high-value/high-cost specialized information products that service specific needs of carefully targeted users. On a financial basis, targeted media consistently out-perform mass market media. This is because the information provided is more valuable to the target audience and the advertising is more valuable to companies targeting that audience.

Window of Opportunity: The Medical Niche

Following a similar niche market strategy, *Physicians' Online* offers high-value/high-cost information products to a specific high-value target audience. *Physicians' Online* doesn't present an immediate threat to the current crop of commercial online systems. However, the window of opportunity to capture our niche market may narrow if the Big Three shift their marketing strategies from mass markets to niche markets of higher value information products and services.

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Although we have both a technical edge and pharmaceutical marketing support mechanism in place, these companies have deep pockets and many other products and services they could bundle or use as loss-leaders. We will use our lead time to leverage our "First-Mover Advantage" to control the "Physician Desktop" and erect effective physician market barriers.

III - Medical Online Services

AMA/NET

Several previous attempts to create online information services for physicians are now defunct, including MINET, PHYCOM, and AMA/NET. In 1981, MINET (Medical Information Network) was announced by GTE Telenet. In 1983, MINET went online and offered three primary services -- MEDMAIL, PHYCOM, and AMA/NET. MEDMAIL was essentially a repackaging of GTE's TELEMAIL service for the medical profession. PHYCOM was a pharmaceutical advertiser-supported online service that failed to develop any products or services that could attract physician use. AMA/NET offered a comprehensive menu-driven package of high-quality but hard-to-use services and databases designed to appeal to physicians. MINET and PHYCOM quickly died from lack of physician demand due, in part, to the immature PC market. With the AMA's financial backing, AMA/NET lingered on until 1990, when the AMA claimed it could no longer justify shouldering the ongoing losses.

One can argue that the AMA abandoned AMA/NET prematurely. The AMA was certainly well-positioned to leverage its large membership and computer use by physicians was clearly on the rise. However, AMA/NET never had more than 40,000 members -- and less than 5,000 were ever "active" (i.e., used the system more than once). Why? Because AMA/NET was a "Fee-per-Use" network -- with charges ranging from $38 to $42 per hour!

US HealthLink

With the demise of AMA/NET in August 1990, there were no online services dedicated to the medical profession until the Spring of 1992. Hard-core physician-users still had the MEDSIG Forum on CompuServe, but it's relatively expensive and doesn't offer information products and services designed to appeal to most physicians.

Then, in the Spring of 1992, a resurrected version of AMA/NET, renamed US HealthLink, went online. No longer affiliated with the deep pockets of the AMA, US HealthLink is set up as a cooperative venture between the Oregon Health Sciences University (OHSU) and the IEI Network, Inc., an organization formed by former AMA/NET staff. Otherwise, US HealthLink appears identical to the old AMA/NET. When a user signs on to US HealthLink, he is greeted by the same old "klunky" interface and the same comprehensive, but hard to use, package of services and databases. The list includes MEDLINE, EMPIRES Literature Service, MEDICOM Drug Interaction Service, COMTEX Medical News Service, Bulletin Boards, Electronic Mail Service, Clipping Service, etc. In addition, there is a selection of services from the MGH/Harvard computer network including DXplain, a diagnostic decision-support tool developed at MGH.

The MEDLINE offered is a stripped-down version developed by OHSU. It has a clumsy interface and only offers abstracts back to 1987 (A complete version of MEDLINE would go back to 1966). EMPIRES (Excerpta Medica Physicians Information Retrieval and Education Service) Literature Service is derived from EMBASE, the biomedical bibliographic database maintained by Elsevier Science Publishers. This database is much smaller than MEDLINE -- only covering 320 journals since 1989. However, it has a better search interface than the OSHU version of MEDLINE.

So physicians familiar with AMA/NET feel right at home with US HealthLink. What has changed is the market strategy. Instead of "Fee-per-Use," US HealthLink offers physicians a "Fixed-Fee-for-'Unlimited'-Use" ('Unlimited' here means less than 4 hours per month). US HealthLink charges a fixed $35 per month ($420 per year) for "Core Products & Service" plus

additional fees for "Premium Services" (Support/FaxAlert), Faxes, Full-Text Reprints, Personal Clipping Services, and communications cost in excess of 4 hours per month.

US HealthLink vs Physicians' Online

> **The more our system is used, the more money we make ... the more their system is used, the more money they lose!**

US HealthLink derives its revenue from a fixed-fee charged monthly to its subscribing physicians. This strategy superficially appears to benefit physicians, however, under closer inspection, US HealthLink does not truly encourage physician use. From US HealthLink's perspective, the most profit is generated by selling monthly contracts (which generate revenue) but never actually delivering the service (which generates cost). And, as discussed previously, this pricing strategy captures market-share of existing high-volume users, but does nothing to attract new or casual users.

Physicians' Online offers the same products and services as US HealthLink, albeit at much higher-quality and for FREE with advertising. Cost is no longer an issue. Since advertisers are charged only if the ads are actually viewed ("Pay-per-View"), the more physicians use the system, the more money *Physicians' Online* makes. In other words, we are motivated to make our system more useful and responsive to our members needs. US HealthLink makes money selling monthly contracts to physicians who don't use the system. We make our money when our system is used.

Although US HealthLink is a competing full-service online information system designed for physicians, *Physicians' Online* has several key advantages, including –

     (1) Our MEDLINE is complete and has the best search interface on the market.
     (2) Our on-site terminals make *Physicians' Online* conveniently accessible.
     (3) Our dedicated communications software is a user-friendly "Graphical-User-Interface" (GUI).
     (4) Our reliance on "Pay-per-View" advertising, rather than membership fees, enables *Physicians' Online* to profitably encourage use by *every* physician - new and causal users, as well as high-volume users.
     (5) Our system delivers superior product, performance, and service and is priced to be free-of-charge with advertising or competitively priced without advertising.
     (6) Our system has the backing of professional societies.
     (7) Our system delivers its service to "members" not "customers."

US HealthLink provides a favorable focus for comparison and allows us to "piggyback" our membership marketing efforts. Since US HealthLink subscribers pay monthly, not annually, there is no penalty for switching immediately to *Physicians' Online*. Without a major technical overhaul to improve their user-interface, overhaul their MEDLINE module, and shift their market strategy to an advertiser-supported system, we expect to acquire most of their subscribers.

US HealthLink has approximately 5,000 members and has established a gateway connecting an additional 2,000 Physician Computer Network (PCN) members. *Physicians' Online* is well-positioned to capture the US HealthLink customer-base, in part, because we have an implementation lead time of at least six to twelve months that provides ample time to erect the required barriers. In addition, US HealthLink may be constrained contractually, financially, and bureaucratically by their OHSU relationship.

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Features: US HealthLink vs Physicians' Online

Feature	US HealthLink	Physicians' Online
Cost	$420 / year	FREE
Free online time	up to 4 hrs / month	unlimited
Complete MEDLINE	NO (1987 to present)	YES (1966 to present)
Boolean Search Interface	YES	YES
Graphical User Interface	NO	YES
Mouse / Key Control	NO	YES
NLP Search Interface	NO	YES
Relevance Ranking	NO	YES
MEDLINE Journal Club	NO	YES
Free Clipping Service	NO ($10 / folder / month)	YES (unlimited folders)
Diagnostic Decision-Support	DXplain	QMR
Disease Synopsis	DXplain	QMR
Drug Interactions	MEDICOM	USP
Complete Drug Information	NO	YES
Full Featured BBS	YES	YES
Menu Driven	YES	YES
Electronic Mail	YES	YES
Advanced FORUM Features	NO	YES
"Live" Conference Rooms	NO	YES
Text File Downloading	YES	YES
Software Downloading	NO	YES
Uploading Supported	NO	YES
FAX options	YES	YES
Topical Forums	YES	YES
Medical Society Boards	NO	YES
Pharmaceutical Company Support Boards	NO	YES
24 Hour Support Line	NO	YES
Online Help	YES	YES

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Physician Computer Network (PCN)

Physician Computer Network (PCN) is attempting to establish a nationwide network linking office-based physicians electronically with a variety of health-care organizations. As stated in their Second Quarterly Report for 1992: Physician Computer Network, Inc. --

> operates a national, interactive, two-way and verifiable electronic communications Network linking its office-based Physician Members and the healthcare industry. This interactive Network provides both physicians and healthcare organizations, such as hospitals, clinical laboratories, Medicare, insurance carriers, pharmaceutical manufacturers, managed care providers and others with a cost-effective means of information exchange which enhances practice administration and increases productivity...Our goal remains to create the largest, on-line and interactive Physician Network in America.

As originally conceived, PCN offered physicians a complete medical office management system -- including software, hardware, training, and support -- free-of-charge. In return, physicians were required to view 90 minutes of interactive advertising per month and allow PCN to retrieve confidential patient information for resale as "anonymous, aggregate clinical data."

The Four Related Business Segments of PCN

1 - NETWORK SERVICES
PCN offers a comprehensive medical office management system designed to computerize patient records and to generating patient billing, insurance claims billing, and wide variety of financial and clinical reports.

2 - INTERACTIVE MEDIA
PCN offers the pharmaceutical industry an interactive, verified, "Pay-per-View" advertising vehicle that physicians are forced to view for 90 minutes each month.

3 - COMMUNICATION DATA-LINKS
PCN offers an online network connecting physician offices to other health-care organizations including -- hospitals, clinical laboratories, managed health-care providers, claims clearinghouses, and insurance companies.

4 - CLINICAL MARKETING DATA
PCN offers clinical data and market research gathered from the physicians' patient records for purposes of obtaining health-care treatment practices and observational & post-marketing surveillance reports about pharmaceutical products.

Market Resistance to PCN

Founded in 1988, the PCN concept attracted strong backing from IBM, several pharmaceutical companies, Lehman Brothers, and others. Four years and $50 million later, there are still less than 2,000 installed systems and PCN is running out of money. In addition, PCN continues to receive a cool reception from physicians. Why ?

(1) Physicians resist using any media that forces them to view advertising. PCN insults physicians by requiring them to spend 90 minutes per month viewing advertising and taking quizzes on the ads viewed.

(2) Busy physicians value their time as much as their money. So the financial
savings have to be substantial for physicians to eagerly sign-up for the
privilege of viewing 90 minutes of advertising per month.

(3) The PCN medical office system differentiated itself from competition based on
price alone. Who are PCN's competitors? A rapidly growing and highly
competitive medical office system market that offers many inexpensive and
high-quality alternatives to PCN. Over 50 major medical office systems are
available from well-established companies with a combined installed-base of
over 50,000 users. These software packages are distributed and serviced by
the growing legions of small service-oriented medical office system
companies. These small "Value-Added-Resellers" (VARs) specialize in the
medical office system market and offer customized packages of hardware and
software to meet the individual needs of their client physicians. These local
vendors offer a personal approach to customization and service. Vendors can
take advantage of the wide variety of high-quality low-cost alternatives to
IBM hardware (computers, drives, monitors, printers, etc.) and pass these
savings on to their client physician. In short, they bundle hardware,
software, customization, training, service, and ongoing support, as complete
system solutions that effectively compete with PCN in terms of price and
quality.

(4) PCN has targeted high-patient volume practices. For large practices,
computerization pays for itself. Custom computer solutions are a small
fraction of overall practice costs. Savings are immediately realized through
better practice management and financial controls. Revenue growth is
realized through improved claims processing and patient accounts tracking.
So, for high volume practices, the small savings afforded by PCN is a false
economic benefit. Large practices can not afford to not have the best possible
computer system customized to their individual practice needs. And with the
proliferation of lower-cost medical office systems, computerization is cost
effective even for solo-practices. Small local service-oriented vendors are best
positioned to met the medical office system needs of physicians and are the
major threat to PCN.

(5) PCN preys on the widespread computer ignorance of physicians. PCN offers
a single solution to simplify choice for busy physicians. Although a simple
choice, PCN is not the best choice. Computer savvy physicians realize there
is no simple solution. A computer system must meet the unique
requirements of each physician. Fortunately, computer ignorant physicians
are not isolated from the computer-sophisticated. Physicians are rapidly
becoming more computer-savvy, in part, reflecting the computerization of
society in general. And, as discussed before, physicians are trained to use
their peers as an information resource. If a physician feels uncomfortable
with computer technology, he will rely on peers with more computer
knowledge to guide his purchase decisions. Physicians who have become
early adopters of computer technology have a tremendous influence on their
peers and the future direction of medical computing in general. Therefore, by
failing to win the enthusiasm of computer-sophisticated physicians, PCN has
lost tremendous market leverage.

(6) Since PCN's introduction, more strings have become attached to the
"Physician Member Agreement." Today, in addition to the 90 minutes of
mandatory advertising viewing each month, physicians must pay up to
$2,760 per year and sign a guarantee to continue lease payments should PCN
fail. Where's the incentive?

(7) Finally, physicians avoid any activity that potentially violates patient
confidentiality. As stated in their annual report: "PCN, by virtue of our
Physician Member Agreement, has the right to market the anonymous,
aggregate clinical data contained in the databases of its Physician Members."

How can patient confidentiality be preserved if PCN has regular access to
patient records? And even if PCN could convince physicians that
confidentiality is preserved -- Can PCN convince the public? Do physicians
really want patients to know their personal medical records are being traded for
some computer equipment? For most physicians, it's just not worth it. These
controversial ethical issues have irreparably distanced PCN from the public,
the medical profession, and the pharmaceutical industry.

PCN: A Viable Advertising Medium?

Initially, *Physicians' Online* competes only with the INTERACTIVE MEDIA segment of PCN.
Strangely, this is the most underdeveloped portion of PCN. A viable advertising medium
must combine both --

    (1) an *information component* (content) -- tailored to the needs of a target
        audience and

    (2) an *advertising component* -- tailored to the needs of advertisers
        targeting the same audience.

As previously mentioned, PHYCOM was a failed attempt to establish an advertiser-
supported online network because it failed to develop any information content other than
advertising. Similarly, PCN has a powerful advertising component without providing any
information content. In fact, the primary user of the system is the physician's office staff, not
the physician. So how can you get physicians to view advertising without delivering
information content? PCN "solves" this problem by contractually obliging physicians to view
their ads. Basically, PCN pays physicians to view advertising. This heavy-handed approach
is direct but creates a medium that has no content other than coercive advertising.

Physicians' Online takes a more traditional approach to attracting its audience. By providing
physicians with information products and services they can use, *Physicians' Online* use
becomes a natural component of the health-care delivery process. By moving to the background
and being targeted to the individual user, *Physicians' Online*'s advertising is transformed
into another useful information resource that is always available when needed -- not a 90
minute interruption every month.

Network Building Strategy

While both PCN and *Physicians' Online* share an ambitious mission, the real issue is -- "How
to get there?" Two distinct network building strategies have emerged -- PCN vs *Physicians'
Online*.

The PCN strategy relies on the installation of complex and costly office management systems
that link physician offices to the PCN network. These systems are primarily used by office
staff. Physicians only use the system for the mandatory monthly viewing of advertising.
While this strategy produces contractually captive customers with high system-switching
costs, their competitors have a large installed customer-base with similar high system-
switching costs. Since PCN's ability to capture existing market-share is limited, PCN is
forced to compete with many well-established medical office system vendors in order to
capture a share of the remaining physician offices yet to be computerized. With a limited
number of captive physicians, PCN faces an uphill battle in attracting the many participants
and the capital needed to establish a true national medical information & communications
network.

The *Physicians' Online* strategy relies on the installation of simple and low-cost software in
existing computer systems and the placement of low-cost and easy-to-use dedicated terminals
at convenient sites in the health-care environment that link to the *Physicians' Online*
network. *Physicians' Online* is used exclusively by physicians and provides information &
communication services *on demand* and *at point-of-need*. *Physicians' Online* provides a very
attractive alternative for the existing installed-base of competing online information

providers who currently face low switching costs. In turn, *Physicians' Online* creates high customer switching costs due to its pricing, technology, products, alliances with multiple organizations, CME credits, membership services, and support. With an ability to serve every practicing physician, *Physicians' Online* can attract the critical mass of participants and capital needed to establish a true national medical information & communications network.

Physician Market Strategy: PCN vs Physicians' Online

	PCN	Physicians' Online
Founder Background	Advertising	Medicine
Primary System Use	Office Management	Clinical Information
Primary User	Office Staff	Physician
Online Advertising	Dedicated Interactive Advertising Sessions	Shown simultaneously with any online product or service
Primary Physician Use	Mandatory Viewing of Ads	Elective Information Retrieval
Sophistication of Initial Users	Low	High
Advertising Price	High	Low
Cost to Users	up to $2,760/yr	Free
Ad Exposure / User	Limited	Unlimited
Potential Audience Size	15,000 Office Systems (Stated company goal for 1995) (< 2% of Physicians)	Every Physician (>500,000) (100% of Physicians)
Potential Users / Computer	1	Unlimited
Company Investment / User	$ Thousands	Negligible
Ad $ / Hr / User to Break-even	$ Hundreds	$<10
Multiple Market Strategy	Competitive	Alliance Building
Medical Office System Market Positioning	Competitive	Complementary

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Additional Obstacles for PCN

PCN's stated goal is to install over 15,000 office systems by 1995. Even if PCN manages to convince enough physicians to sign-up, serious obstacles remain --

(1) Management distraction due to recurring financial restructuring requirements.
(2) Loss of flexibility due to complex financial structure.
(3) Limited financial capability due to excessive debt and impending liquidity crisis.

(4) Existing bad-will with "stakeholders" -- including physicians, pharmaceutical companies, data-link partners, and investors.

Stakeholders	Issues
Physicians	• Financial Commitment • Public Relations • Ethical Issues regarding confidential patient data • Coercive and Insulting Advertising Format
Pharmaceutical Companies	• Failure to meet charter sponsors' expectations • Limited Market Penetration • Financial Wherewithal
Data-Link Partners	• Warrants issued have lost value • Viability: New Program Credibility • Financial Wherewithal
Investors	• Deteriorating stock price • Impending defaults on debts • Where will additional capital come from?

In Summary

The key to success for any national online health-care network is to win the support of the medical profession. Using "free" medical office systems as its entry point, PCN has attempted to build physician support through bribery. Due to poor financial performance, PCN has been forced to add physician fees, thereby eliminating the "free computer" incentive. In a highly competitive medical office system market, the PCN system must now compete based on quality and service, not cost. So far, PCN has spent over $50 million to connect less than 2,000 office sites to their network. After spending over $25,000 per office, PCN still has less than 5% of the medical office system market.

As part of its shifting strategy, PCN is now placing a greater emphasis on other network capabilities in order to diversify revenue sources beyond "Pay-per-View" advertising. No wonder. With a network reaching less than 1% of physicians, PCN's ability to build an effective online advertising medium is limited. Without physicians, PCN has no product. To be an effective advertising medium, you need subscribers. PCN's key to success remains -- it must attract more physicians.

In the face of negative publicity, unanswered ethical issues, floundering finances, and a cool reception by physicians and the pharmaceutical industry, Physician Computer Network has a precarious future. However, PCN's difficulties provide *Physicians' Online* with valuable lessons and validate our unique physician market strategy.

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We foresee that, due to --

> (1) the large Net Operating Loss carry forward of $50 million,
> (2) existing contracts with service providers, and
> (3) small but significant installed-base of users (less than 2,000)

at some point, PCN could be an attractive acquisition target for *Physicians' Online*.

Medical Society Online Systems

Most medical societies are exploring ways to offer online bulletin board systems (BBSs) for their members. Although more cautious than the AMA, the American College of Physicians (ACP) has been a leader in this area. They have been influential in dramatically improving the quality of medical abstracts found in MEDLINE by creating a logical format which is now the standard followed by most medical writers. They recently started RESNET, a online system for medical residents that uses a subset of the CompuServe system. In April 1992, the ACP introduced the "ACP-NLM Flat Fee Program." ACP members can have virtually unlimited access to the NLM network via Grateful Med software for only $200 per year. Although plans have not been made public, ACP was recently granted a trademark for "ACP Online." Clearly they are preparing for a more comprehensive online system.

As AMA/NET clearly demonstrated, medical society online systems face the same barriers to success as other online systems. *Physicians' Online* enables medical societies to safely establish their own online systems on our network. For a participating medical society, we develop and maintain their Medical Society Forum on *Physicians' Online*. Medical Society Forums are complete BBS systems and have all the same features available on *Physicians' Online* including their own membership, E-mail systems, bulletin boards, libraries, etc.

> Note: Medical society support for *Physicians' Online* does not imply medical society endorsement for online advertising. *Physicians' Online* functions the same whether or not the advertising-support features are turned on. The choice of whether or not to turn on the advertising is left for the individual physician to decide. Physicians may chose to turn off the advertising features at any time and assume the cost of services provided.

IV · Pharmaceutical Marketing Media

Pharmaceutical Marketing Market

In 1991, $63 billion of prescriptions were written by less than half a million physicians -- over $150,000 per physician. Pharmaceutical companies currently spend approximately $5 billion dollars annually on the sales and marketing of drugs and an additional $2 billion dollars on the distribution of free drug samples -- over $15,000 per physician. These marketing and sales activities include --

> - sales calls to physicians by manufacturers' sales representatives,
> - professional journal advertising,
> - direct mail and telemarketing communications to physicians,
> - distribution of free drug samples to physicians,
> - marketing and sales research, etc.

The largest prescribing specialties are internal medicine, family practice, general practice, and cardiology. Together, these specialties accounted for over half the prescription sales in 1991. In 1961, there were 656 drugs available by prescription in the US -- today there are over 8,000. This has created a marketing "din," as a plethora of products are vying for the limited attention of busy medical professionals. Increasing competition, falling profit

margins, and increasing marketing costs have created an acute need for more careful market segmentation and targeting of pharmaceutical marketing campaigns.

Current Pharmaceutical Marketing Mix

Physicians' Online competes with other advertiser-supported media to secure a share of the pharmaceutical marketing pie. Our objective is to establish *Physicians' Online* advertising as a generally accepted part of the standard "Pharmaceutical Marketing Mix." Our medium is positioned to complement, not compete, with other media in the overall pharmaceutical marketing mix.

The Current Pharmaceutical Marketing Mix

Field Reps   TV   Radio

Medical Journals

Magazines

Direct Mail

Newspapers

Brochures

Friends

Drug Samples — PHYSICIAN — Peers

Conferences

General Climate

Clinical Trials

Telemarketing

Patients

Surveys   Ad Specialties Gifts Services   Word of Mouth

The extremely competitive nature of pharmaceutical marketing assures rapid acceptance of any new medium that effectively targets physicians. Pharmaceutical marketing appears to be ruled by a herd psychology: "So go the Competition – So go We." Pharmaceutical companies can not neglect any marketing method that might give competitors an edge.

The merest possibility of a new medium attracts widespread interest by the pharmaceutical industry. Witness *Medical News Network* (MNN), scheduled for launch in the Spring of 1993, Whittle Communications claims to have raised over $100 million in pharmaceutical advertising commitments for this new multimedia project. To date, MNN can't claim a single physician user. And, even in the face of negative publicity, unanswered ethical issues, floundering finances, and a cool reception by physicians, *Physicians Computer Network* (PCN) successfully completed an IPO for $36 million in 1991. PCN has already spent over $50 million to connect less than 2,000 office sites to its network -- over $25,000 per physician!

So, new media products will continue to proliferate as long as there remains such a large market opportunity. The media companies that serve this industry are well-capitalized. They are all well-positioned to leverage their existing pharmaceutical client-base to sponsor new media opportunities as they arise.

As a relatively undercapitalized "dark horse" entrant, *Physicians' Online* must leverage its "First-Mover Advantage" by rapidly creating barriers to ward off these well-positioned and well-capitalized competitors. Only one barrier can really protect us --

a completely satisfied physician membership.

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The key to our success is <u>ABSOLUTE DEDICATION TO "CUSTOMER" SERVICE</u> —

(1) Physicians must feel like "members" not "customers."

(2) Physicians must view *Physicians' Online* as a quality information service that maintains the integrity of its information products and clearly separates the needs of physicians from the demands of pharmaceutical advertisers.

(3) We must nurture our ongoing member relations by offering only the highest quality products, services, and support.

Our satisfied members become our most potent marketing weapon by recruiting new membership, leveraging our marketing into new clinical sites, and securing our market-share against future competition. ("Why switch? *Physicians' Online* is great, friendly, free, and ours." "How many high-quality, free-of-charge, medical information services do you need?")

As a national "medical information utility," our goal is to position *Physicians' Online* as a "natural monopoly" by leaving no opportunity for competition to exploit. A steady stream of new products & services, dedication to membership service, professional society endorsements, and a large installed-base of on-site terminals make *Physicians' Online* · difficult to duplicate, even for large well-heeled media companies.

Whittle Communications' Medical News Network (MNN)

While little detail has been revealed about Medical News Network (MNN), company officials confirm that Whittle will begin pilot testing an advertising-supported "News and Continuing Medical Education" system for physicians in the spring of 1993. This non-interactive broadcast information system will be delivered via television to the physician's office.

Consistent with Whittle's previous efforts, MNN will be an extremely costly endeavor with the most significant investment being in the areas of programming and broadcasting. It appears the system will broadcast its programming in a flexible format similar to "Pay-per-View" television in order to register physicians for CME credits and audit audience participation. Presumably, MNN will match its advertisers with their intended audience.

Potential Obstacles for MNN

While Whittle has pre-sold all the advertising slots for the first year, MNN faces a number of physician and advertiser acceptance issues —

(1) Given the peripatetic nature of patient care, the physicians' office may not be the most suitable place for such viewing. In fact, physicians may prefer to continue to receive such programming through the existing lunch or vacation conference formats.

(2) Physicians may prefer to earn CME credits in a more interactive or self-directed educational environment.

(3) If physicians can't flexibly schedule MNN viewing to coincide with their busy schedules, this system will fail from lack of viewers — indicative of yet another advertiser-supported service that was insensitive to the needs of physicians.

(4) Since all the advertising space for the first year is sold-out, many companies will be excluded from participation. This exclusion creates an opportunity for another competitor, like *Physicians' Online*, to attract interest.

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<u>An Expanded Market Opportunity Created by MNN</u>

Given the cost of developing and maintaining the MNN system and given that the system requires changing physicians' habits, it is not clear MNN will prove cost-effective for advertisers. While MNN publicity will increase general awareness of alternative media and promote pharmaceutical company acceptance of new media, *Physicians' Online*, with its cost-effective micro-marketing approach and sophisticated precision-targeting features, will greatly benefit from Whittle's investment and educational efforts.

V - Pharmaceutical Micromarketing Industry

<u>Emerging Pharmaceutical Micromarketing Industry</u>

Pharmaceutical marketing in the 1990s is trending towards micromarketing. The four characteristics making the pharmaceutical market conducive to micromarketing are:

    (1) *measurability* -- the potential and actual market size of the specific drugs
                  being marketed can be determined;
    (2) *accessibility* -- physicians, the purchasing decision maker in this industry,
                  can be targeted;
    (3) *profitability* -- pharmaceutical companies spend $7 billion annually in the
                  US on sales and marketing and drug sampling; and,
    (4) *stability* -- the pharmaceutical industry is recession-resistant.

The principal objectives of micromarketing and sales research information are --

    (1) to enable pharmaceutical manufacturers to *compensate* their sales
           representatives based on geographic sales or prescription activity,
    (2) to *quantify* individual product sales and prescription levels, and
    (3) to *direct* their marketing and selling activities to specified or selected
           groups of physicians.

Currently, approximately $500 million annually goes towards the purchase of prescription-drug information. Two companies have historically dominated the prescription-drug information market: IMS and Walsh International. Both companies offer drug-information products based on pharmaceutical sales data segmented by zip code. In other words, they provide prescribing information that is aggregated geographically; not at the individual physician level. This creates a market opportunity for prescriber-level data.

MMG (Medical Marketing Group) and PMSI (Pharmaceutical Marketing Services, Inc. -- a Walsh International spin-off) are both emerging companies that are setting new standards in pharmaceutical micromarketing. They have both developed physician-specific profiling databases. By slicing their data in a variety of ways, they have developed a series of useful marketing information products that enable pharmaceutical companies to direct their efforts to influencing the prescribing habits of specific physicians. These sophisticated pharmaceutical marketing support tools, based on prescription data, track the prescribing behavior of any targeted market segment down to the individual physician.

<u>Limited Supply of Media Targeting Specific Physicians</u>

While these new prescriber-level marketing tools provide a powerful means to target pharmaceutical marketing efforts, the supply of media targeting physicians at an individual level is limited.

Currently, prescriber-level information is only useful in --

- directing sales representatives,
- direct mail campaigns, and
- telemarketing efforts.

Prescriber-level targeting tools are available but the supply of true prescriber-level targeted media is limited. In fact, the prescriber-level data market leader, MMG, is attempting an aggressive acquisition strategy designed to increase the demand for their services by creating a new supply of media which target physicians based on their prescriber-level database.

> The need for more careful market segmentation and targeting of marketing campaigns
> have lead to a proliferation of both traditional and newer non-traditional mediums to
> reach physicians. Drug companies have provided increased advertising support for
> newer marketing mediums especially those which target their markets more
> selectively. This has caused an increasing shift of the $400 million dollars per year
> devoted to traditional journal advertising, as pharmaceutical firms become
> increasingly receptive to these newer advertising vehicles. They are actively looking
> for new means to reach physicians.
>   ("Medical publications under siege from 'new media'" *Publishing News*, May 1990, p. 44.)

This trend is our market opportunity. *Physicians' Online* provides a medium which naturally complements pharmaceutical micromarketing services by providing a true physician-level targeted medium. An alliance with a prescriber-level prescription data provider allows us to strengthen our targeting features by including direct "prescription behavior targeting." In addition to targeting by demographics and context, physicians can also be targeted by their specific drug prescribing practices.

Limited Psychometric Data Sources

Pharmaceutical micromarketing companies are also exploring alternate sources of relevant prescriber-level marketing information other than prescription data --

- (1) to enhance the overall predictive value of their marketing tools and
- (2) to decrease their strategic dependence on providers of raw prescription data.

One approach is to add "attitudinal" or "psychometric" data to their products. However, this data is currently compiled from relatively primitive survey data.

Physicians' Online offers a source of proprietary prescriber-level psychometric data that is continuously generated from online user activity. Our prescriber-level psychometric data can be combined with prescriber-level prescription data to create new marketing tools which not only track but also predict physician prescribing behavior.

New Source for Prescriber-level Prescription Data

Initially, *Physicians' Online* will not enter the prescription data market which is currently dominated by IMS, Walsh, and Medco. However, with the advent of hand-held, pen-operated computers with cellular data network capabilities, we are well-positioned to offer prescription fulfillment services and thus become an independent source of prescriber-level prescription data in addition to our psychometric data.

Drug Sampling Services

An estimated $2 billion worth of free drug samples are distributed annually via drug manufacturers' sales forces. However, increased Federal regulation requires documentation of the final destination of these samples and forces drug manufacturers to track these samples more closely, thus creating another market opportunity. Through our ad linkages, drug detailing boards, and special E-mail offerings, drug sample fulfillment services are conveniently offered electronically to physicians, thus automating both the fulfillment process and the required record-keeping.

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Additional Regulatory Considerations Governing Pharmaceutical Marketing Practices

Pharmaceutical marketing practices have come under increasing scrutiny. Pharmaceutical advertising, marketing, and promotional practices have drawn critical fire during recent hearings held before the Senate Committee on Labor and Human Resources. Legislation strengthening the Food and Drug Administration's (FDA) authority to police drug company promotional activities has been proposed.

In an effort to pre-empt the creation of formal legislation by a gesture of self-regulation, the Pharmaceutical Manufacturers Association (PMA) and the American Medical Association (AMA) issued guidelines outlining acceptable and unacceptable promotional practices. Other professional societies, including the American College of Cardiology (ACC) and the American College of Physicians (ACP), have issued similar guidelines.

AMA Ethical Guidelines on Drug Industry Gifts
(adopted December 1990)

Unacceptable gifts
- Cash
- Subsidies for travel, lodging or personal expenses or in compensation of time spent for physicians attending conferences or meetings.
- Payment for token consulting or advisory services.
- Gifts with "strings attached," such as those given in relation to a physicians' prescribing practices.

Acceptable gifts
- Gifts with educational value, such as textbooks.
- Work-related gifts of minimal value: pens, notepads and penlights.
- Subsidies to underwrite the costs of continuing medical education conferences or professional meetings.
- Scholarships for medical students, residents and fellows to attend educational conferences, as long as selection is made by their academic institutions.
- Reasonable compensation and reimbursement of expenses sustained by consultants.
- Modest meals, usually in conjunction with educational programs.

These guidelines have forced the discontinuation of certain practices and the modification of many others.

> For example,
> in 1988, $165 million was spent by pharmaceutical companies to pay for
> physicians and their spouses to attend meetings in resort spots such as
> Monte Carlo and Palm Springs, complete with entertainment such as cruises
> and golf outings.

Such practices, as well as cash subsidies, clinical "research" grants, and other valuable gifts "with strings attached," have been dramatically curtailed. Leveling the playing field of "unsavory" marketing practices has freed up marketing dollars to invest in other promotional areas.

The FDA is also being pressured to create stricter regulations regarding the degree of product disclosure information included with pharmaceutical advertising. Several studies have pointed to the lack of adequate product disclosure information and the widespread use of dangerously misleading product messages included in many pharmaceutical marketing campaigns.

How do these regulations effect *Physicians' Online*?

(1) *Physicians' Online* is the only advertising medium that complies with the spirit of FDA disclosure regulations. With *Physicians' Online*, online advertising is not only linked to complete FDA product information but also to relevant medical literature, pharmaceutical detailing databases, independent USP drug information, and fulfillment services.

(2) *Physicians' Online* terminals and dedicated software are clearly of educational value, so
their distribution by sponsoring pharmaceutical companies doesn't violate any
ethical guidelines.

(3) Our online "advertising shell" enables us to clearly distinguish between promotional
messages and information products. Our information products are not
contaminated, in anyway, by promotional material.

Our Growth Strategy

Online advertising enables *Physicians' Online* to deliver virtually any information product or
service, free-of-charge, to physicians, while paying royalties to third-party information and
service providers. Our growth is fueled by our strong cash-flow position and our ability to
encompass new "micro-information niches" by incrementally adding new products & services
and serving new elements in the overall "Medical Information Grid". By connecting medical
professionals, pharmaceutical companies, pharmacies, medical information & service
providers, hospitals, laboratories, offices, insurance companies, and, ultimately, patients,
with a national electronic communications network, *Physicians' Online* becomes a platform-
independent "distribution system" which maintains growth by "feeding it" a steady stream of
new information products and communication services.

Network Expansion to a Comprehensive Medical Information Utility

Physicians' Online is also well-positioned to leverage its physician membership to exploit the
huge market opportunities that will open with the imminent introduction of low-cost, pocket-
sized, pen-operated computers able to connect wirelessly to national cellular data networks.
Prescription fulfillment services, prescription data, pharmaceutical marketing services,
patient laboratory data, insurance claims processing, personal pager services,
communications services, FAX networks, etc. will all be within easy striking distance.

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Summary

To provide a comprehensive solution to the overwhelming information retrieval and communications problems of today's physician is both our challenge and our opportunity.

Physicians' Online is dedicated to serve the information and communications needs of physicians and the marketing needs of the pharmaceutical industry.

Physicians' Online initially distributes third-party produced information products and services, on demand, at point-of-need, and free-of-charge, to member physicians while simultaneously providing the pharmaceutical industry with a sophisticated, cost-effective, precisely-targetable, fully-accountable, non-coercive, risk-free, "Pay-per-View" advertising medium.

Physicians' Online is well-positioned to become the leading communications conduit through which all health-care transactions are routed. .

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VII - The Appendix

On-line Membership Sign-up Procedure

Connect

↓

Enter
Social Security #

↓

Member ?

Enter
Personal Password

Membership
Questionaire

↓

↓

Full Member
Access

User Assigns
Password

"800" Membership Sign-up Procedure

Physician Calls 800 #

Initial Screening Interview

- Individual Membership
- Institutional Membership
- On-Site Terminal Request
- Other

Individual Membership Request

On-Site Terminal Request

Qualified?
(physician / resident / student)

Basic Information
(name / address / phone / etc.)

Site Information
(Hospital / Library / Clinic / ER)

Necessary Equipment?
(software / modem / computer)

Special Offers
Software
Modems
Terminals
Computers
Printers
Supplies

On-Site Administrator Info
(Register Responsible Party)

Area Code / Phone Number of User's Terminal / PC?

Assign Local Network Access Phone #

Process Request
(Free Terminal Or Purchase)

Review Log-On Procedure & Communications Parameters with user

Send Follow-up Information Membership Materials, Dedicated Software, Etc.

Online Advertising Features

Features	Benefits
NO RISK Advertising "Pay-per-View" Advertising "No View...No Pay"	Unlike other advertising media, *Physicians' Online* only charges advertisers for ads <u>actually viewed</u>! If no one views your ad...you pay nothing. True "Pay-per-View" advertising. So you risk nothing by advertising on *Physicians' Online*. You receive a full accounting of all advertising activity and pay only for what was actually seen by your target audience. This makes *Physicians' Online* the most cost-effective and fully-accountable marketing medium to target physicians.
Precise Physician Targeting	Each member fills out a complete online demographic questionnaire when he signs on for the first time. Whenever he signs on to the system, he is identified by his membership number (social security number) and password. So the system knows at all times, who is calling and demographically important information about each individual member. For example, if a company wants to market a product just to cardiologists who practice angioplasty in St. Louis, it can selectively "narrowcast" the message to just these individuals.
Precise Message Targeting Messages Tailored to Each Segment	A product message can also be selectively varied by target segment. If a product is used by different specialties for different reasons, the product message can vary depending on who is viewing the ad. In other words, product features of interest to infectious disease specialists can be shown to them while different features can be shown to gastroenterologists.
Cost-Effective	At 7.5¢ per 15 second ad, you get 15 messages guaranteed to be viewed, for the same price as a single letter that is usually thrown out unopened by the same physician. E-Mail messages, at 50¢ each, are less than half the price of a typical postal mailing...and E-Mail is not thrown-out unviewed! Drug detailing databases, at $18 per hour, are a full order of magnitude less than an average "detailing" sales call which currently costs over $200.
Receptive Audience -- Suggestible State of Mind	*Physicians' Online* members go online for computerized clinical information. 90% of physician online time is devoted to using clinical information databases. 30% of that

time is spent on drug information databases. 65% of that
time is spent on MEDLINE. 60% of MEDLINE activity
involves patient care problems and 40% involves therapy. In
other words, physicians are looking for drug or therapy
information over 60% of their online time.

So you have a influential physician, staring at a computer
screen, actively seeking information about therapy...Not a
bad time to suggest a new product or remind him about an
old product!

And, as "early adopters", *Physicians' Online* members are,
by nature, more receptive to new products and ideas.

Associative Conditioning Tool

Create Powerful "Prescribing
Preference" Reflexes in the Minds
of Targeted Physicians

Physicians can be conditioned to form mental associative
links between a product and a clinical situation. These can
be created using online messages which couple a product
name with a brief yet descriptive "point line." Using 15
second ads, messages flash into the physician's mind 4 times
per minute or 80 times during an average 20 minute
MEDLINE search. Although the physicians may not be
primarily concentrating on the advertising, the ad changes
are always noticed, if only briefly. Through frequent online
reinforcements, associative links can be built into the minds
of targeted physicians. So, whenever a physician
encounters that clinical situation, the associated product
comes to mind first.

The essence of effective pharmaceutical marketing is
Associative Conditioning -- To be the first product that pops
to mind when confronted with a therapeutic decision. What
could more powerfully influence physician prescribing
behavior than being the first drug to pop to mind? The
ultimate "point-of-sale" influence is carried in the mind of
the potential customer.

Professional Goodwill

Since *Physicians' Online* is so newsworthy, we anticipate
extensive coverage by the medical press. This publicity
along with medical society support and early co-marketing
efforts, brings high visibility to *Physicians' Online* and its
early pharmaceutical supporters.

By being identified as supporters of a service which brings
physicians so much for so little, participating
pharmaceutical companies enjoy tremendous professional
goodwill.

Market Leverage:

Member characteristics
 • early adopters
 • influential
 • receptive
 • high prescribers
Physicians' Online members
Extend Marketing Reach

Physicians who regularly use MEDLINE literature search
services are "Medical Opinion Leaders" and high
prescribers. Their opinions are sought out by their peers
since they are assumed to be the most knowledgeable and
current with the literature.

Physicians who use computers are "early adopters" of new
technologies and products and therefore the trendsetters of
their profession. As professional trendsetters, *Physicians'
Online* members extend the reach of any marketing

effort by influencing the rest of the profession. By their
nature they are also more receptive to new products and
ideas.

By marketing to *Physicians' Online* members,
pharmaceutical companies can leverage their marketing
dollars by reaching the most influential members of each
target segment. So capturing these influential physicians
leverages marketing efforts beyond their numbers to the
rest of the profession.

Ad-Linked Features --

Electronic --
  • Drug Detailing
  • Fulfillment
  • Customer Support

Online advertising can be targeted by any demographic
characteristic down to the specific physician. Messages can
be targeted through "static demographic links," dynamic
"context-sensitive links," and "prescribing-practices links."

In addition to the automatic linkage to FDA drug disclosure
data, pharmaceutical companies can link their
advertisements with a number of other features.

Online ads can be linked to --
        -- relevant MEDLINE abstracts
        -- full text database of supporting literature
        -- other online full-text databases
        -- drug detailing databases
        -- other drug information databases
        -- pharmaceutical company forums
        -- real-time ad response monitoring
        -- online surveys
        -- online customer service support
        -- E-mail to contact the company directly
        -- Fulfillment Functions
                -- drug sample requests
                -- detail man follow-up requests
                -- further drug information

Ads can be linked to specific MEDLINE abstracts so that an
specific ad is shown whenever a specific abstract is
retrieved. In addition to static links, dynamics links can be
created that link ads to specific search concepts. Whenever
a specific concept is invoke by a physician, a specific ad can
be displayed (context-sensitive links). **Precision targeting
transforms online advertising into useful information because
ads are now relevant to the viewing physician.**

· Electronic Direct Marketing

MEMBER/ALERT Services
  • E-Mail
  • FAX/NET
  • Regular Mail

The full range of MEMBER/ALERT services offered by
Physicians' Online is available for use by pharmaceutical
companies. Electronic and direct mail services include E-
Mail, FAX/ALERTS, MEMBER/ALERT Postcards, and
special direct mail services. Through any of these means,
messages can be sent to any demographically definable
physician segment.

· Direct Physician Communication

In addition to targeting advertising and other electronic
messages, full E-Mail and "live" conferencing capabilities
allow companies to communicate directly with individual
physicians.

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Company Forums	Pharmaceutical company forums allow companies to focus and coordinate their online activities through the use and maintenance of company-specific detailing databases, E-mail services, customer support, fulfillment services, special announcements, bulletin boards, etc.
Single-Sponsor Services	Companies may also exclusively sponsor specific online events such live conferences, special interest information services, etc.
Pharmaceutical Advisory Board	In addition to a responsive customer service and sales support team, pharmaceutical advertisers have an opportunity to directly influence the direction of *Physicians' Online* through membership on the Pharmaceutical Advisory Board.

Company Sales Force Support

Sales Reps Online

Advertising Specialties
  • Membership Packets
  • Software
  • On-Site Terminals

With industry-wide estimates of over $200 per sales call and limited opportunities to reach busy physicians, any method that cost-effectively increases total physician contact time is valuable to the pharmaceutical industry.

Pharmaceutical sales reps can have personal online memberships to *Physicians' Online* -- giving them full access to online services including E-Mail, sales call follow-up, advertising placement, etc.

Physicians traditionally receive small gifts from "drug reps" when they make sales calls. Detail men are always looking for low-cost items of value to physicians that convey an advertising message. Free membership packets, software, and dedicated terminals make perfect gifts that pharmaceutical representatives can distribute to physicians and hospital sites in their market territories.

Terminals, membership packets, and software can be further customized with the name of the company, pharmaceutical representative, or any other special advertising or message.

Start-Up Screens on the terminals can be customized to show any message at start-up such as the name of the company donating the terminal. The start-up screen can be used to directing physician to use the online company forum to contact drug reps, get information, order samples, etc.

By encouraging the use of *Physicians' Online*, pharmaceutical reps extend their total physician contact time through the use of electronic mail facilities and other services directed to their specific physician-clients, and generate goodwill in their established and potential customer-base.

Real-time Market Intelligence   *Physicians' Online* Psychometric Data Sources

-- MEDLINE Database itself
-- MEDLINE Usage Data
-- Concept Frequency Data
-- Advertising Response Data
-- Specific Survey Data

Powerful new market research tools can be developed from these new psychometric and market data sources. Our continuous real-time market intelligence provides powerful measures of changing market trends.

Online Test Marketing   Any online behavior, such as utilizing options for more drug information, can be tied to specific message displays. The response rate to different messages can be used to identify and differentiate unique concerns of different market segments. Other promotions and market strategies can be fine tuned using response rate data. For example, does a message which emphasizes an new antibiotic's coverage of gram negative bacteria interest an infectious disease physician more than its low incidence of renal toxicity?

Monitoring Online Behavior to
Test and Adjust Market Strategies

Complete online activity data allows advertisers to test the efficacy of different advertising approaches by monitoring the online behavior of targeted physicians.

MEDLINE Trends   Using MEDLINE as a starting point, powerful new indices can be constructed and used to generate both periodic and customized reports that monitor changing market trends. For example:

Monitor future medical trends

CONCEPT FREQUENCY INDEX

Concept indexes coupled with citation frequency will generate data concerning overall changing trends in the medical literature over time. Shifting concept frequency trends in the medical literature reflect changing future trends in clinical practice. This information identifies early market trends, anticipates changing demand, and recognizes potentially significant new areas of research, as well as new applications of existing drugs. These concept indices will routinely screen the most forward-looking terminology -- for use in advertising and promotions.

AUTHOR/ CITATION FREQUENCY INDEX

Authors of journal articles will be indexed by publications, field of research, etc. This database will generate data on the most influential researchers by various criteria such as area of research, numbers of publications, number of times research is cited by others, etc. By identifying the most influential researchers, research support moneys can be allocated to maximize leverage of research and marketing efforts.

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Online Search Behavior

Physician Psychometric Data

By tracking what questions physicians are asking, *Physicians' Online* has a real-time proprietary database of the clinical concerns of physicians which can be analyzed by any demographically definable physician characteristic.

This database enables the pharmaceutical industry to track the changing clinical concerns of their target markets and adjust their marketing strategies accordingly.

Online search behavior data provides "focus group" type data, but at a greatly reduced cost and higher significance because it monitors what physicians are actually doing...not what they say they are doing.

Physician psychometric data from *Physicians' Online* allows pharmaceutical companies to design effective marketing strategies by developing and marketing products that met the changing concerns and need of physicians.

By coupling this data with prescribing practices data, the pharmaceutical industry now has a complete and potent marketing methodology available to them.

Special Direct Online Services

For pharmaceutical companies who want to expand their direct day-to-day control over this new medium, a customized system will allow them online access to monitor advertising activity , place new ads, maintain company forums, process electronic mail, process online fulfillment requests, etc.

Full sales force computer network out-sourcing services are also available.

Dedicated Account Representatives and Customer Service Staff

A dedicated sales staff and customer support team aids clients in tailoring their online marketing activities to meet their specific marketing objectives.

Account Information

Each advertiser gets an account statement that gives a complete accounting of ads viewed. This report can be customized to yield useful market information.

Online Surveys

A traditional survey approach can be taken as well. These real-time surveys can be conducted either directly or indirectly. These surveys can be designed quickly and the target audience selected by any criteria with the results available within a few days. The online market survey becomes a simple yet highly responsive management tool.

Customized Account Information

Special Customized Ad Activity Reports will yield useful market information. For example, "Who actually viewed that ad" can be summarized by any targeted demographic characteristic.

EXHIBIT F

Physicians' Online

TM

Phase I Business Plan

Medical Knowledge Management

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Christian Mayaud, MD
Chief Executive Officer

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Notice of Confidentiality & Disclaimers

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The information contained in this plan ("Confidential Information") is highly confidential and is the proprietary information of Physicians' Online, Inc. ("Company").

The taking and review of this plan by a prospective investor or other reader constitutes the agreement on the part of such person to keep the Confidential Information strictly confidential and not to use or disclose the Confidential Information in any manner without the Company's prior written consent.

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This plan does not constitute an offer to sell any securities. Any such solicitation will be undertaken only under appropriate documents and pursuant to all applicable securities laws.

The plan set forth herein is believed by the Company to be reliable to the best of its information. It must be recognized, however, that projections and predictions about the Company's future performance are necessarily subject to a high degree of uncertainty, and no warranty, expressed or implied, is made that such projections will be achieved.

Physicians' Online is a trademark of Physicians' Online, Inc.

Table of Contents

"The success of managed care will probably depend on the ability ... to influence physicians' choices in the direction of increased value."

– John K. Iglehart. Managed Care. *N Engl J Med* 1992; 327: 742.

Welcome to

Physicians' Online

**A Personal Online Medical
Information and Communications
Service for Member Physicians**

_____

(MESSAGE HERE)

I - The Executive Summary

Physicians' Online is a personalized online medical information and communications service dedicated to empowering physicians with the tools essential to advance the quality and control the cost of health care through informed decision-making.

Physicians' Online ("Company") is an innovative new electronic medium designed to evolve into a comprehensive national medical information and communications network servicing the entire health care industry. The Company's online information products and communication services provide physicians with powerful tools to manage Medical Knowledge, Prescriptions, and Patients. *Physicians' Online* provides a distribution outlet for third-party produced information products and services. *Physicians' Online* also provides valuable proprietary information services to other industry participants including managed care organizations and the pharmaceutical industry.

Phase I - Medical Knowledge Management

Online medical information and communication services which are readily accessible and free of charge to member physicians through optional online advertising support. The Company has assembled the most powerful, yet user-friendly, collection of medical information tools available from leading third-party sources. The core information products target three key areas of identified information need, including medical literature (MEDLINE), medical diagnosis (QMR), and drug information (USP). *Physicians' Online* is being developed in cooperation with major medical societies, pharmaceutical manufacturers & marketing organizations, hospitals, managed care organizations, and leading technology & third-party content providers.

Implementation: 1993 through 1994

Phase II - Prescription Management

Online prescription fulfillment and cost containment programs made possible through the use of "Smart Electronic Prescription Pads" (PDAs). This network is being developed in cooperation with managed care organizations, hospitals, pharmacists, pharmaceutical distributors, leading technology providers, and other health-care participants.

Implementation: 1994 through 1996

Phase III - Patient Management

Online patient information for efficient retrieval and transaction processing resulting in enhanced clinical and administrative efficiency and cost-containment. This network is being developed in cooperation with corporate employee benefits programs, private health insurance carriers, out-patient laboratories, electronic claims processors, installment credit organizations, hospitals, and other health care participants.

Implementation: 1995 through 1997

The Company's competitive advantage is based on its ability to attract physician use. Founded by practicing physicians with extensive experience delivering practical information products to busy clinicians, the Company has developed a market-driven product strategy designed to win maximum professional acceptance and use. The Company is establishing critical strategic alliances with leading participants in every major health care market segment. The Company is currently working with several leading content and service providers to develop new products and services for this expanding multi-billion dollar market opportunity.

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The management team has spent over $100,000 and more than three years developing the Medical Knowledge Management System using leading third-party technology providers. The Company is in the process of raising an additional $300,000 through ten units of common stock. At a company valuation of $1.9 million, each $30,000 unit consists of 150,000 shares (1.6%) of the Company's common stock. This money will enable the Company to obtain pharmaceutical advertising commitments, additional strategic alliances, and to begin the final integration of our Phase I – Medical Knowledge Management System.

While the Company anticipates completing subsequent rounds of financing over the next twelve months, primarily with its strategic industry partners, the Company believes it will be able to use the public markets to provide its investors with a quick exit (2 years) and a high return for this first round investment. From a Price/Earnings perspective based on the attached analysis of the highly-valued comparable public companies and the Company's own financial projections, investors could achieve a return of 52 to 233 times their original investment within 2 years. Based on the Price per Physician Member valuation of PCN, such an investment would result in a 233 times return over the same time period – even if the Company remained unprofitable.

Comparable Market Valuations

	PCN (1)	MMG (2)	AOL (3)
Business	Computerized Medical Office Systems & Network Services for Physicians	Pharmaceutical Micromarketing Services based on Physician Prescribing Profiles & Media Targeting Physicians	Consumer Online Information Services
1993 Est. Net Income (4)	n/a (5)	$ 4.8 million	$ 3.4 million
1993 Est. Physician Members	2000	n/a	n/a
Current Value of Common Stock (12/92)	$ 20 million (6)	$ 422 million	$ 127 million
Market Multiple Per Physician Member	$ 10,000 (6)	n/a	n/a
P/E Market Multiple	n/a	88 x	37 x

1   Physician Computer Network, Inc.
2   Medical Marketing Group, Inc.
3   America Online, Inc.
4   Industry analysts estimates of net income for 1993.
5   For the nine months ending Sept. 30, 1992, PCN had revenues of $2.0 million with a net loss of $12 million. Between 1987 and 1991, PCN has an accumulated net loss of $62 million.
6   While PCN has raised more than $63 million since 1987, its largest shareholder has recently committed $10 million for 50% of the company. Although currently valued at $20 million, within the last 52 weeks PCN has been valued as high as $77 million. At its peak valuation, this resulted in a market multiple per physician member of approximately $39,000.

Implied Physicians' Online Market Valuations at IPO

	Physician Membership	Net Income	Round 1 ROI Multiple (7)
1994 Est.	100,000	$ 6 million	—
Valuation based on PCN Market Multiple	$ 1 billion	n/a	233 x
Valuation based on MMC Market Multiple	n/a	$ 528 million	123 x
Valuation based on AOL Market Multiple	n/a	$ 222 million	52 x

7 The two year ROI multiple assumes 16% Round 1 stake is diluted to 7% at IPO in 1994. (see following chart)

Staged Financing Scenario

Date	Shareholders	Shares Offered	Purchase Price	Investment (10)	Company Valuation (8)	Ownership % @ IPO (9)
	Founders	8,000,000	$ 0.005	$40,000		36%
Jan 93	Round 1	1,500,000	.20	$300,000	$1,900,000	7%
May 93	Round 2	1,500,000	.50	$750,000	$5,500,000	7%
Jul 93	Round 3	1,000,000	.75	$750,000	$9,000,000	5%
Sep 93	Round 4	5,000,000	1.00	$5,000,000	$17,000,000	23%
Sep 94	Public	3,000,000	12.00	$36,000,000	$240,000,000	14%
	Employees (11)	2,000,000	.10	$200,000		9%
Totals:		22,000,000		$43,040,000		100%

8 The company valuation at IPO is conservatively based on current AOL market multiples. Increases in company valuation prior to IPO are based on achieving specific milestones as listed in *VI · Financial Projections* under *Funds Required & Their Uses.*
9 If the company does not pursue its second or third phase business opportunities, later round financing will not be required thus resulting in potentially less dilution and a larger ROI for earlier investors.
10 The company is currently in discussions with several strategic industry partners. It is anticipated that subsequent financing will come from these sources.
11 These shares of common stock will be dispersed to employees prior to IPO.

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Physicians' Online: 5 Year Plan

To empower physicians with the tools essential to advance the quality and
control the cost of health care through informed decision-making.

	Phase I	Phase II	Phase III
Time Frame	0 - 2 yr	1 - 4 yr	3 - 5 yr
Essential Tools	Medical Knowledge Management	Prescription Management	Patient Management
Vehicle	Physicians' Online	Pharmacists' Online Pharm Reps' Online Formularies Online Managed Care Online	National Health Card Network
Potential Membership	500,000 physicians 10,000 pharmaceutical execs	300,000 physician offices 100,000 pharmacies 50,000 drug reps	250 million patients 10,000 hospitals other health care participants
Core Markets	MEDLINE Rx Micromarketing	Prescription Fulfillment Rx Cost-Containment	Patient Administration Cost-Containment Programs
Market Size	$50 million / $7 billion	>$70 billion	>$500 billion
Market Size/MD	$1000 / $15,000	>$150,000	>$1,000,000
Secondary Markets	• Clinical Databases • Decision-Support Tools • News & Financial Services • Special Interest Forums • other areas of identified need	• Home Care • Managed Care • Formularies • Pharmacy Network • "Electronic Detailing" & Rep Support	• Electronic Patient Record • Outpatient Laboratory Transactions • Patient Health Maintenance
Main Revenue Sources	• Pharmaceutical Advertising • Pharmaceutical Micromarketing Information • Membership & Usage Fees	• Prescription Processing • Micromarketing Information • Membership & Usage Fees	• Patient Transaction Processing • Communication Services • Micromarketing Information • Membership & Usage Fees
Competitive Advantage	• "Medical Info Vending Machines" • Sophisticated MD Targeting ("Ad Wizard"/ "Smart Ads") • Installed Terminals, PDAs, & PCs • Computer-Sophisticated Members • Medical Society Support • Pharmaceutical Industry Support • Third-Party Office Systems Support • Pharmaceutical Executives' Online • User-Friendly Interface • Proprietary Text-Retrieval Software • Proprietary Psychometric Mktg Data	• "Smart Electronic Prescription Pads" (PDAs) • Installed Terminals, PDAs, & PCs • Automated Prescriber Assistance Programs • Proprietary managed care applications • National Electronic Formularies • Proprietary Prescriber Profiling • Patient Prescription Profiles • Proprietary Psychometric Marketing Data	• "National Health Card" • Installed-base of diverse POS/PON entry-points linking integral industry participants • Electronic Patient Transactions Network • Third-Party Office Systems Support • Hospital Systems Support • Cellular Communications link to Physicians
Strategic Alliances	• Medical & Professional Societies • Pharmaceutical Companies • Pharmaceutical Marketing Cos • Prescription Data Marketing Companies (IMS/ MMG/ PMS) • Third-party Content Providers (NLM/ Camdat/ USP) • Medical Office System Companies • Technology Partners (CompuServe/ Sybase/ Conquest/ Coconut/ Apple/ Sun/ HP/ Cube)	• Prescription Fulfillment Companies (Medco/ McKesson) • Pharmacies/Pharmacist Societies • Managed Care Organizations • HMOs/ PPOs/ IPAs • Hospital Chains • Hospital Formularies • Corp Employee Benefits Programs • Medical Office System Companies • Technology Partners (AT&T/ Apple/ EO/ General Magic/ Motorola/ HP)	• Corp Employee Benefits Programs • Private Health Insurance Carriers • BC/BS/Medicaid/ Medicare • Out-Patient Labs (MetPath/ BioScience/ SKF/ NHL) • Outpatient Testing Companies • Installment Credit Organizations • Electronic Claims Processing & Clearing Houses (NEIC/ EDS) • Medical Office & Hospital Systems Companies
Critical Technologies	• Systems Integration of existing hardware & software technology • Packet Data Network technology • Simple Text Retrieval Software • Third-party Content Development	• "Personal Digital Assistants" (PDAs) • Data network technology • Proprietary PDA applications development • Personal Info Management (PIM)	• Systems Integration • Proprietary patient administration & cost-containment applications development • Cellular data network technology
Infrastructure Milestones	• 150,000 physician members • 5,000 hospital members • 5,000 hospital-based terminals • 5,000 PDAs in Physician Offices • 150,000 additional POL software installations	• 300,000 physician members • 10,000 hospital members • 20,000 hospital-based terminals • 100,000 PDAs in Physician Offices • 10,000 mobile PDAs • 500,000 additional POL software installations	• 500,000 physician members • 10,000 hospital members 50,000 hospital-based terminals • 300,000 PDAs in Physician Offices • 400,000 mobile PDAs • 800,000 additional POL software installations
Infrastructure $	$10,000,000	$50,000,000	$250,000,000
Infrastruct$/MD	$100	$200	$500

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II - The Concept

The Physician Need

Medical practice has always been information intensive. However, the explosive growth of medical knowledge has become a two-edged sword. While it provides physicians with the knowledge to guide their decision-making, it has become increasingly difficult to gain access to this unwieldy, disorganized mass of rapidly growing information. The sheer volume of medical information today has far outstripped the capacity of traditional me.... 's, such as medical libraries, textbooks, and journals, to meet the growing needs of today's physician.

Powerful computerized medical information tools have been developed to meet these needs. However, fundamental economic factors in health-care have inhibited their widespread use. The information products exist...the means of payment does not. Unlike the legal profession, the medical profession can not pass on the cost of information services to the health-care consumer due to the fixed reimbursement system. Computer systems that don't directly contribute to the bottom-line, are hard to justify for cash-strapped institutions and physicians who are facing a squeeze between falling reimbursements and rising costs.

The result:

> (1) a progressive deterioration of physician expertise, and
> (2) prolonged practice adoption delays of significant clinical advances.

Both trends are adversely effecting the quality of patient care.

The Pharmaceutical Industry Need

In 1991, $63 billion of prescriptions were written by less than half a million physicians -- over $150,000 per physician. Over $7 billion per year is spent by the pharmaceutical industry on sales and marketing -- over $15,000 per physician. In 1961, there were 656 drugs available by prescription in the US -- today there are over 8,000. This has created a marketing "din," as a plethora of products are vying for the limited attention of busy medical professionals.

Increasing competition, falling profit margins, and increasing marketing costs have created an acute need for more careful market segmentation and targeting of pharmaceutical marketing campaigns. Sophisticated pharmaceutical marketing support tools, based on prescription data, track the prescribing behavior of any targeted market segment down to the individual physician. With the proliferation of new marketing media designed to reach physicians, pharmaceutical companies increasingly use those that target their markets more selectively.

The Opportunity

To meet the information needs of physicians by providing them with powerful electronic information tools that are user-friendly and readily-accessible on a national computer network while simultaneously providing the pharmaceutical industry with powerful new micromarketing tools including online advertising and psychometric data.

The opportunity exists because --

> The value of advertising to physicians exceeds the cost of providing them with computerized online information.

Physicians' Online

Physicians' Online is a personal online medical information & communications service for member physicians. Any medical professional who can legally write prescriptions qualifies for membership. *Physicians' Online* is available free-of-charge to any member who elects to accept the online advertising features. Otherwise, it is available at competitive online rates without advertising. *Physicians' Online* provides physicians with valuable medical information & communications services, on demand, at point-of-need, while simultaneously providing powerful marketing tools for the pharmaceutical industry.

Physicians' Online: The "Win-Win" Strategy

Physicians' Online is positioned to simultaneously meet the needs of multiple markets —

Physicians are provided with personalized online medical information & communications services on demand, at point-of-need, and free-of-charge. All the information products are high-quality, readily-accessible, easy-to-use, and free-of-charge. Online product messages are personalized to the needs of the individual physician.

Pharmaceutical companies are provided with a powerful, sophisticated, cost-effective, precisely-targetable, fully-accountable, non-coercive, risk-free, "Pay-per-View" advertising medium and a significant opportunity to generate goodwill.

Pharmaceutical marketing industry is provided with a new medium capable of precise physician targeting based on demographics as well as prescribing practices and a new source of proprietary psychometric data to enhance their micromarketing tools.

Medical information industry is provided with a high-volume platform to profitably distribute their products and services to physicians.

Medical Societies are provided with their own online Medical Society Forums and other benefits for their membership – free-of-charge.

Medical center libraries are provided a source of MEDLINE and other information products and services – free-of-charge.

Physicians' Online Positioning

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III - The Service

Our Online Information Products & Services

To attract physician use, *Physicians' Online* has assembled the finest collection of online
information products available from leading third-party medical information providers. Our
core products target three key areas of identified information need –

- medical literature (MEDLINE),
- medical diagnosis (QMR), and
- drug information (USP Drug Info).

Unlike previous efforts to establish new advertiser-supported media, *Physicians' Online* does
not have to "create a market" for new products and services. *Physicians' Online* delivers a
well-known information product (MEDLINE) for free which physicians currently use more
than 3 million hours per year (at fees ranging up to $45/hr).

Although "FREE MEDLINE" is the single most persuasive reason for physicians to switch to
Physicians' Online, QMR (a medical diagnostic decision-support tool) and USP Drug Info (a
comprehensive drug information resource) add significant clinical utility to our introductory
offering. They cost relatively little to implement and they position *Physicians' Online* as a
comprehensive "one-stop shopping" information resource for physicians. Although the
demand for information products other than MEDLINE is currently small, we anticipate
rapid growth in other online information products & services as physicians become more
familiar with our system and routine *Physicians' Online* use becomes the *de facto* "Standard
of Care."

Another significant incentive for physicians to use *Physicians' Online* regularly is that it
keeps track of the online time spent on education activities. So, *Physicians' Online* becomes a
significant source of Continuing Medical Education (CME) credit for active members. (CME

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credits are required for maintaining hospital admitting privileges, professional licensing, specialty certification, etc.)

The design of each module maximizes ease-of-use and relevance to clinical practice. Casual, as well as sophisticated, users quickly master the system using plain English commands. No steep learning curves or Byzantine commands to remember.

```
< 1 >    Literature Search (MEDLINE)
< 2 >    Diagnostic Support (QMR)
< 3 >    Drug Information (USP)
< 4 >    Society Forums (ACP/ AAFP/ ACC)
< 5 >    Special Interest Forums
< 6 >    Industry/Company Forums
< 7 >    Mail
< 8 >    Personal Services
< 9 >    Membership/Account Information
< 0 >    Quit
```

All online products and services are free-of-charge to member physicians who accept the online advertising option. If the advertising features are turned off, online products and services are competitively priced on a "Pay-as-You-Go" or "Fixed-Fee-for-Unlimited-Use" basis.

Comprehensive online communication services include --

- electronic mail,
- bulletin boards,
- special interest forums,
- special society boards,
- "live" conference rooms,
- libraries,
- paper specific comments boards,
- journal clubs,
- journal specific forums,
- electronic publications,
- personal clipping services,
- document delivery services,
- news & financial services,
- pharmaceutical customer support boards,
- member/alert features,
- FAX capabilities,
- software libraries,
- online customer support, and
- online documentation & help.

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Our Network

Our strategy maximizes physician use of electronic information resources by making them widely available, easy-to-use, and free-of-charge. By using a national data network with local access numbers, *Physicians' Online* can be accessed from any computer equipped with a modem using standard communications software or our own dedicated software.

Our Communications Software

Our software provides additional functionality and is distributed free-of-charge to all members. It has an easy-to-use, menu-driven, "Graphical-User-Interface" (GUI) and is compatible with all major computer operating systems – including DOS, Windows, Macintosh, and UNIX. It supports black & white and color graphics and provides mouse, as well as keyboard, control.

Our On-Site Terminals

Most clinical questions do not arise at a time or location convenient to computer access. The practice of medicine keeps physicians moving between offices, clinics, and various hospital locations throughout a typical day. This is why physicians require pagers to be reached. This is also why desk-bound computers haven't helped physicians with their daily work -- physicians don't work at their own desks! A physician's office computer is usually being used by staff for office management tasks. In the hospital, computers, when available, are .dedicated to specific administrative tasks. The hospital library is often closed or not conveniently located and usually has only limited, if any, computerized information resources. And even if the physician has a home computer equipped with modem, communications software, and an online search account, the physician is often too tired and the question is no longer as pressing as it was during the day when the information was needed for clinical decision-making. No wonder less than 30% of the clinical questions that arise during patient care are ever answered.

Medical Information Vending Machines & Membership Kiosks

To increase physician use, *Physicians' Online* will distribute dedicated terminals to high volume sites -- such as emergency rooms, medical libraries, physician lounges, clinics, group practices. By facilitating access, at point-of-need, these workstations function as "medical information vending machines" and "membership kiosks" -- satisfying information appetites at strategic locations throughout the health-care environment and automatically recruiting new membership. Even physicians without personal computer systems can routinely access our system using these on-site terminals.

For example:

> A physician's daily routine can include a stop by the hospital-based terminal -- to get a few clinical questions answered on a problematic case, check the medical literature on a topic of interest, order a rʳ print, check his personal clipping service for new abstracts, check a patient's laboratory results, register for a conference, renew a medical society membership, check the latest travel immunization recommendations, pick up electronic mail, check out information on a new antibiotic, order drug samples, etc.

The 5,000 major US hospitals offer a total installed-base potential of over 20,000 terminals. In addition to direct distribution of terminals by *Physicians' Online*, pharmaceutical sponsors, using their hospital-based sales forces, have an opportunity to donate terminals (customized with their own marketing messages) to their client sites. A large installed-base of on-site terminals generates goodwill for pharmaceutical sponsors, creates a "strategic omnipresence," increases physician membership & total online demand, acts as a barrier to competition by gaining early control of the "Physician Desktop," and serves as entry points into our emerging health-care communications environment.

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Our Membership

Any medical professional who can legally write prescriptions qualifies for membership, including --

- physicians,
- physician assistants,
- physicians-in-training,
- osteopaths,
- podiatrists,
- oral surgeons, and
- dentists.

Members have an opportunity to use any information product on our system, entirely free-of-charge, by allowing online advertising to be shown. These ads are not intrusive or disruptive since they are restricted to the bottom 1/8 of the screen and change only four times per minute. Members can engage in online activities without any interruption from the advertising which is shown simultaneously.

Physicians can access *Physicians' Online* from any computer equipped with a modem and communications software or from any on-site terminal or personal computer equipped with our dedicated software. Physicians can order our free dedicated communications software package and low-cost modems directly from *Physicians' Online* using our 800 Membership Support Line or anytime they are online.

To become a member, physicians fill out an online membership questionnaire the first time they use the system. After completing the questionnaire, a unique membership number (their social security number) and a password are assigned to each physician. From then on, members merely type in their number and password and they have full access to the system.

Since each physician has his own membership number and data file, and each terminal has its own identifier number, the system always knows who is using the system, where he is, and what he is using the system for. This provides a unique opportunity for pharmaceutical advertisers to precisely target online advertising and collect psychometric marketing data. Member activity data also provides *Physicians' Online* with continuous feedback to constantly monitor and refine our ongoing marketing and product development efforts.

Our "Membership" Growth Strategy

Current MEDLINE users are a secure initial membership-base to grow from. As computer-sophisticated physicians, MEDLINE users are more likely to use other new information products & services. They are also "early adopters" of other new technologies and pharmaceuticals, and, as "Medical Opinion Leaders", they are influential with other physicians. MEDLINE users are usually internists, family practitioners, general practitioners, and cardiologists, which are the highest prescribing physician specialties.

Physicians' Online is dedicated to maintaining a quality medical information service with responsive membership support services. As our company name -- *Physicians' Online* -- implies, we want our members to feel they are "members" of an online information "service" that is really "theirs" and not just another "customer" of a medical information "company".

As we successfully convey this image to our initial membership and carefully nurture our member relations with quality products and support, our members will be our most potent marketing weapon -- recruiting new membership, leveraging our marketing into new clinical sites, and securing our market-share against future competition.

Ultimately, our success rests on the physicians' recognition that *Physicians' Online* is a quality information service that maintains the integrity of its information products and clearly separates the needs of physicians from the demands of pharmaceutical advertisers. Promotional information must

be clearly distinguished from all other information products. Information products can not be contaminated, in any way, by promotional material.

As a result --

- No exclusive covenants will be given to any pharmaceutical company that would compromise the integrity of our information products and our credibility to physicians.

- No exclusive advertising rights will be granted since this would create an opportunity for potential online competitors.

In summary, our basic strategy is to make physicians feel like "members" not "customers" and then to turn our "members" into "evangelists."

This is a powerful marketing strategy, and, for the physician market place, this may be the only strategy that can work. Physicians are a very fraternal order and expect to "belong." They are "members" of their medical profession, their subspecialty, their hospital attending staff, their medical society, their group practice, their medical school, their subspecialty, etc. Physicians will expect to be members of *Physicians' Online* -- We can't disappoint them.

The Challenge of Sophisticated Users

The most important influence on physician behavior is "word of mouth." Physicians do very little without first consulting their colleagues, even informally. Nowhere is this more true than with computer technology. Physicians do not generally feel comfortable with computers. So, most physicians are keenly aware of which colleagues use computers and rely heavily on their "technical" advice. Before making any purchase, physicians generally consult these "computer savvy" colleagues first.

Computer-sophisticated physicians are the easiest group to get to use our system since they are always looking for new uses for their computers. And since these physicians tend to do MEDLINE literature searches themselves, they realize immediate savings by switching to *Physicians' Online*.

Although they are the "easiest-to-get-to-use" our system, they are also the "hardest-to-please" since they have an instant basis of comparison with the systems they are currently using. They will immediately run head-to-head comparison literature searches before making the switch. Therefore, we need the most sophisticated online system possible, right from the start, since our initial users are the most sophisticated physicians.

Since computer-savvy physicians are those most likely to use our system initially and they are also influential with the rest of the physician market, it is critical to the success of *Physicians' Online* to win their support early on. By winning their support, we have won the soundest membership base for growth and a bullet-proof barrier to any future competition.

This creates a potential risk during our launch phase. If we make any false claims, our users will know immediately. Anything short of the highest quality online system will disappoint and ultimately hurt us. We know that no system is perfect. All systems evolve over time. There are "bugs" and other performance problems that need to be fixed. How do we suspend their criticism and, better yet, get them to help us improve our system? *The Beta-Test Phase Membership Recruitment Program.*

Beta-Test Phase Membership Recruitment Program

By recruiting computer-sophisticated physician users for our beta-testing phase, we accomplish several key objectives --

- Convert the "hardest-to-please" physicians into "co-developers" of our system.

- Temper any initial criticism by calling our initial system a "beta-test version" and thereby allow us to work-out any initial bugs with an understanding group of sophisticated users.

- Make these "Beta-Testers" feel special and highly valued. Make them feel that their feed-back has a positive influence on the development of *Physicians' Online*. Eg., "Participate in the development of the most revolutionary advance in physician communications since the advent of the personal pager. -- *Physicians' Online*."

- Obtain valuable last minute user-feedback for fine tuning our system before its "official" launch date.

- Leverage our future marketing by "seeding" the medical community with active computer-sophisticated members who form our initial membership-base and act as membership recruiters, clinical site administrators, and informal on-site technical support.

- Set a tone of close cooperation with our early membership. Developing a friendly and responsive membership / technical support service is the key step to win physicians' long-term loyalty and helps convert our members into *Physicians' Online* "Evangelists".

A prolonged beta-test phase allows us to get up to speed without becoming overwhelmed with the sudden increase in system utilization a "launch date" would create.

Although it will appear that only a limited number of beta-testers will be granted online privileges at this stage; in fact, there is no such limit. We will expand this program to rapidly capture most computer-sophisticated physicians.

Online Advertising

Physicians' Online provides member physicians with an optional "advertising shell" through which any third-party information product or communications service can be simultaneously distributed to them free-of-charge. Members are never interrupted by online advertising since it is restricted to the bottom 1/8 of the screen and changes only four times per minute.

As a "Pay-per-View" advertising medium, we are motivated to increase physician demand by making our system more useful and responsive to our members needs. In addition, third-party information providers are motivated to keep their online products useful to physicians since they are paid fees based on actual use.

In other words, "Pay-per-View" advertising enables *Physicians' Online* to remain responsive to the needs of physicians since the more physicians use our system, the more money we make..

MEDLINE User Characteristics

Studies show that --

- The heaviest MEDLINE users are Internists (IM), Family Practitioners(, General Practitioners(GP), and Cardiologists. These physicians are also the heaviest prescribers -- writing over half the US prescriptions in 1991.
- Physicians who regularly use computers are "early adopters" of new products.
- MEDLINE users are "Medical Opinion Leaders" and influential with their peers.
- 70% of MEDLINE searches are run by physicians themselves -- another 25% are run for physicians by search intermediaries such as medical librarians, other physicians, medical students, etc.
- When using computerized information products in general, physicians spend 90% of their time using clinical information databases --
      - 65% MEDLINE
      - 30% drug information
- 60% of MEDLINE searches involve patient care.
- 50% of MEDLINE searches concern therapy.

So, *Physicians' Online* advertising is displayed to influential, receptive, and high-prescribing, physicians, staring at a computer screen, actively seeking therapeutic information — the most effective time to suggest a new treatment or remind them of an old treatment!

Transforming Advertising into Information: Linkages, Targeting, & "Smart" Ads

Online advertising can be targeted by any demographic characteristic down to the specific physician. Messages are targeted not only through "static demographic links" but also through dynamic and intelligent "context-sensitive links" and "prescribing-practices links."

For example,
a cardiologist sees heart drug ads (static links) and if he is doing a literature search on depression, antidepressant drug ads (context-sensitive links) are also displayed.

When prescriber-level prescription data is linked to our membership profile data, *Physicians' Online* can also target advertising by prescribing behavior. *Physicians' Online* is the first medium to unleash the power of direct prescriber-level targeting.

Additionally, online advertising is linked to full drug disclosure information, including FDA required product information, USP drug information, relevant medical literature, and pharmaceutical detailing & fulfillment services. Ads can be reviewed and their links explored at any time. After reviewing ads, online activities are resumed right where the user left off.

Linked Product Menu

```
< 1 >   Detailing
< 2 >   Product Information
< 3 >   USP Drug Info
< 4 >   Related Literature
< 5 >   Patient Information
< 6 >   Company Forums
< 7 >   Special Offers
< 8 >   Information/Sample Requests
< 9 >   Review other Products
< 0 >   Return
```

(MESSAGE HERE)

Physicians see only relevant advertising, and pharmaceutical companies are only charged if their ads are actually viewed. Thus, *Physicians' Online* provides the pharmaceutical industry with a cost-effective, fully-accountable, non-coercive, risk-free, "Pay-per-View" medium that targets market segments down to specific prescribers, while simultaneously providing physicians with useful clinical information on demand, at point-of-need, and free-of-charge. The advertisements themselves become an additional source of useful information for physicians, since the advertising now relates to their individual practice needs and is not just another irrelevant distraction to endure.

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Strategic Significance of "Optional" Advertising

Members are not required to view ads and can turn them off at any time. However, without the advertising option turned on, they assume the full cost of the information services provided. Also, non-prescription writing professionals, institutions, and the public-at-large may use the system at any time, without advertiser support, at rates competitive with other online information services.

Making online advertising "optional" is a subtle but strategically critical step to win the general acceptance of the medical profession. Physicians resent and resist using any product or service that requires them to view advertising. (Physician resistance to coercive advertising methods has been well-demonstrated by the failure of *Physician Computer Network* to achieve any significant market-share.) Making online advertising optional shifts the decision and responsibility to the individual physician. In other words, if online advertising is mandatory, physicians want to turn it off. If you make it optional, physicians will tend to leave it on. The availability of *Physicians' Online* without advertising also allows physicians to "save face."

Also, "Optional" advertising allows medical societies to endorse *Physicians' Online* without implying any endorsement for online advertising. The choice to view advertising is left to the individual physician.

Our Technology

<u>MEDLINE Search Interface</u>

Physicians' Online has made "Search Interface Design" a strategic priority since the vast majority of physicians are not computer-sophisticated. Even experienced physician-users can be mislead by their own literature searches. Studies show that with the current generation of MEDLINE search systems, search quality relates to the degree of user-experience with the given retrieval system -- with trained medical librarians consistently out-performing even the most experienced physicians. It is this "user-dependent search quality" that text-retrieval systems must address first, before physicians can reliably relinquish their dependence on MEDLINE search intermediaries such as medical librarians.

By using the most advanced text-retrieval technology available, our simple English MEDLINE search interface enables even novices to perform better searches than most "text-retrieval experts" can using other systems. *Physicians' Online* is co-developing the most sophisticated, yet easy-to-use, online MEDLINE search interface available, under an exclusive agreement with ConQuest Software Technologies, Inc., a leader in advanced text-retrieval software, using their patent-pending text-retrieval technology. By integrating well-demonstrated advances in Natural Language Processing (NLP) and Concept Indexing (CI), *Physicians' Online* has the most powerful, yet easy to master, search interface available.

This technology allows both novice and sophisticated physician-users to query MEDLINE, and other online databases, using standard English sentences instead of having to construct complex Boolean search strategies required by other search systems. All a physician has to do is type a question in plain English. The sentence is analyzed for its key concepts, a search strategy is constructed, and then all the relevant abstracts are retrieved from the database. The retrieved abstracts are then ranked in terms of relevance to the initial query. This process results in the most relevant and complete literature search possible with little variability in search quality between experienced and inexperienced users.

For physicians who feel more comfortable doing literature searching "the old-fashioned way," standard Boolean search methods are also fully supported.

<u>Communications Software</u>

Physicians' Online has taken the best features of existing online systems and combined them into a comprehensive online system which is easy-to-use, menu-driven, and can be accessed by any computer using standard communications software or our dedicated software package. Our online system software is being developed by Sybase, Inc. and Coconut Computing, Inc. (developers of the leading graphical online Bulletin Board System (BBS) -- COCONET).

<u>Central Computer System Design</u>

The company's computer system exploits the latest advances in SQL Client/Server technology on a distributed UNIX-based workstation network. Software enhancements and new product modules are developed and implemented incrementally. As the demand for online services grows, computer hardware is added incrementally to increase capacity and preserve system performance .

By using these state-of-the-art technologies, *Physicians' Online* has the most advanced yet easy-to-use online text retrieval system and communications network. *Physicians' Online* delivers information more cost-effectively and with higher performance and quality than any

other existing online service which relies on older mainframe-based technology, awkward and time-consuming Boolean search methods, and clumsy user interfaces.

System Software: Modular Design Philosophy

System software requirements are sorted into functional modules which are designed to integrate seamlessly on a UNIX platform. Modular design allows for rapid and incremental implementation of system features and information products by various independent development teams and vendors.

SYSTEM SOFTWARE OVERVIEW

USER	MODULES	NETWORK
Bulletin Boards	Financial / Mgmt Modules	Custom Reports
Online Conferencing		
Special Forums		
Electronic Mail	BBS Module	Network Administration
Account Info		
User Preferences	Member Data Modules	Customized Output
Online Help		MEDLINE Updating
Literature Queries	MEDLINE Modules	Segmentation
		Usage Data
Drug Info Queries	DRUG INFO Modules	Network Functions
Diagnostic Queries	DECISION SUPPORT Modules	Network Functions
		Ad Entry
Advertising Output	ADVERTISING Module	Ad Tracking
		Ad Demon Control
User Functions	Future Online Product Modules	Network Functions

Phase II Technology:

Personal Digital Assistants as "Smart Electronic Prescription Pads"

To increase points-of-entry into our integrated electronic information and communications environment and to maintain control of the physicians' "Electronic Desktop," *Physicians' Online* will rely on an emerging new class of electronic devices known as "Personal Digital Assistants" (PDAs). PDAs are small, handheld electronic devices that intelligently assist · users in capturing, retrieving, organizing, and communicating information and ideas -- exactly how physicians spend most of their time. These devices will enable *Physicians' Online* to expand physician demand for our online services through convenient mobile access and to facilitate the implementation of our Phase II Prescription Management System.

Made possible through the convergence of numerous digital and telecommunications technologies and the ability to miniaturize electronic devices, first generation PDAs, such as Apple's Newton, are positioned as low-cost pocket-sized electronic notebooks equipped with unique user-interfaces, Personal Information Management (PIM) software, and built-in access to both telephone and cellular data networks. Using pen-based operating systems, PDAs can understand handwritten commands and can be used for freeform notetaking, drawing, calculating, scheduling, list making, and communicating. Built-in telephone and cellular communications provide easy mobile access to online information and communications services and allow remote sending and receiving of faxes and other electronic documents.

Although the future of PDAs lies in true "wireless" communications, cellular data network technology, standards, and infrastructure are not yet adequate to support a national health care information and communications network. In the meantime, using standard telephone data network technology, *Physicians' Online* will introduce specially configured PDAs to be placed next to physicians' telephones. These PDAs act as *Physicians' Online* terminals and "Smart Electronic Prescription Pads."

By seamlessly integrating all the information relevant to making informed therapeutic decisions (including relevant formularies, price lists, drug information, and potential drug interactions) at the "point-of-sale," our "Smart Electronic Prescription Pads" and personalized prescription management software intelligently automate the prescription-writing, tracking, and fulfillment process to facilitate cost-effective therapeutic decision-making. As full-featured communication terminals, our PDA can access all of our other online information products and services as well.

Using PDAs, *Physicians' Online* will revolutionize medical practice by offering up-to-date online information and other network services to physicians on-demand anytime anywhere. *Physicians' Online* is well-positioned to market these devices to the medical profession. The current generation of pocket computers are merely toys for gadget-minded physicians who use them for electronic scheduling and phone books. But with a remote communications link to *Physicians' Online*, PDAs have universal appeal as complete clinical workstations. As personal remote terminals, they will even obviate the use of medical pager systems. When bundled with Personalized Information Management (PIM) software for physicians, our powerful online clinical tools will become a "Standard of Care" and a powerful membership incentive.

IV - The Market Strategy

The Key to Failure

Previous efforts to develop pharmaceutical-supported electronic information networks for physicians (e.g., Fisher-Stevens' PHYCOM, *Physician Computer Network* (PCN), and the soon-to-be-unveiled Whittle Communications' *Medical News Network* (MNN)) all appear to suffer from their lack of insight into the unique information needs of physicians. While these efforts have excelled at raising pharmaceutical advertising commitments, they have failed to win any significant physician following. Their existence is based on the acute marketing needs of the pharmaceutical industry rather than any solid information product design or implementation program.

This is hardly surprising, since these services were all conceived by advertising & marketing executives, not by physicians. Their founders were well-positioned to recognize and satisfy true pharmaceutical marketing needs, but not to recognize and satisfy true physician needs. The unique needs of physicians appear to have taken a back seat to the needs of pharmaceutical companies. A successful advertising vehicle needs an audience, not just advertisers. This disregard for the physician has lead them to a costly strategy of "creating a market" for products & services that serve non-existent physician needs.

The Key to Success

Physicians' Online is a powerful and sophisticated information & communications service designed <u>by physicians</u> for physicians.

Physicians' Online was founded by a physician who established a hospital-based electronic medical information center and observed first-hand how physicians actually use electronic information resources in the clinical setting. Real information needs of physicians were identified and served by providing convenient in-hospital access to high-quality information products.

The three types of information products used most by physicians are –

          (1) medical literature databases,
          (2) diagnostic decision-support programs, and
          (3) drug information databases.

Five key barriers limiting computerized information use by physicians are –

          • high cost,
          • lack of convenient access,
          • steep learning curve,
          • lack of physician awareness, and
          • lack of physician time.

Physicians' Online addresses these barriers by – making the service entirely free-of-charge; improving access through strategic placement of on-site terminals; making *Physicians' Online* easy-to-use with a menu-driven Graphical-User-Interface and simple English search commands; increasing physician-awareness through publicity, advertising, on-site terminals, pharmaceutical company co-marketing, and medical society sponsorship; and decreasing the time required to use these resources by increasing their performance and making their access conveniently available at points-of-need in the clinical environment.

Strategies to Overcome Utilization Barriers

Barrier	Strategy
Price	• FREE
Convenient Access	• "Information Vending Machines" • Communications Software / Hardware
Ease of Use	• User-Friendly Menu-Driven GUI • Simple English Search Interface • Customer Support
Physician Awareness	• Publicity • Medical Society Sponsorship • Member Evangelism • Advertising • Telemarketing • Direct Mail • Co-marketing
Physician Time	• Maximize Utility • Maximize Convenience • Personal CME Credit log • Become the "Standard of Care"

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Offer a Well-known Information Product with Established Physician Demand -- MEDLINE

Unlike previous efforts, *Physicians' Online* does not have to "create a market" for new products and services. *Physicians' Online* starts by delivering a well-known information product (MEDLINE) to physicians, free-of-charge, using standard online information service technology. It is so well-known to physicians that "MEDLINE Search" is synonymous with "Literature Search." MEDLINE is the electronic information product used most by physicians today.

> We don't have to "create our market" – it already exists. Currently, physicians use MEDLINE about 3,000,000 hours per year.

Our physician-oriented market strategy centers on capturing an important share of this existing physician demand as well as significantly expanding total demand through our "Strategies to Overcome Utilization Barriers," as outlined above. By tapping into this large and established physician demand for MEDLINE, *Physicians' Online* quickly builds sufficient system demand and, therefore, online advertising revenue, to generate positive cash-flow and establish *Physicians' Online* as a routine part of patient care. Having secured this stable MEDLINE customer-base, we will build a comprehensive national medical information & communications service by incrementally introducing additional products and services.

The Risks

> Our implementation plan minimizes investor risk while maximizing the growth potential of *Physicians' Online*.

Product development risk is minimized by using established technology from leading third-party software developers, information providers, and systems integrators. Modular software design enables independent development teams and vendors to rapidly design and implement system features and products. These modules are integrated incrementally on a reliable high-speed computer platform running UNIX. Information products are licensed from third-party providers who are paid based on actual physician use. The information providers are responsible for maintaining their own online products.

Physician marketing risk is minimized by initially targeting the MEDLINE market. By offering the best version of MEDLINE, free-of-charge (while other services charge $18 to $45 per hour), we not only capture the bulk of this market but significantly increase its total demand by increasing both the number of users and individual usage. With a current physician demand of about 3 million hours per year, positive cash-flow is achieved with only 15 - 20% market-share for this single product. Publicity during the beta-testing stage further leverages our physician marketing efforts. We win medical society sponsorship by recruiting these groups to serve on our Medical Society Advisory Board and by creating society-specific forums on *Physicians' Online* that are maintained free-of-charge. The American College of Physicians (ACP) (60,000 members), the American Academy of Family Physicians (AAFP) (70,000 members), and the American College of Cardiology (ACC) (28,000 members) are our initial targets. These societies represent physician specialists with the highest prescribing rates – together, these physicians account for over half of all US prescription sales.

Pharmaceutical marketing risk is minimized by securing online advertising commitments before making the service available to physicians nationally. Fortunately, *Physicians' Online* does not have to "create a market" for online pharmaceutical advertising either. *Physician Computer Network* and *Medical News Network* have already demonstrated such a market exists. We have identified potential allies who service the micromarketing needs of the pharmaceutical industry. *Physicians' Online* provides a medium which naturally complements their micromarketing services by providing true physician-level targeting as well as a new source of prescriber-level psychometric data. During our product development phase, we are recruiting five pharmaceutical companies to serve on the Pharmaceutical Advisory Board. As initial sponsors, they gain substantial goodwill from the publicity

generated and are given special co-marketing opportunities such as putting their message on each terminal or software start-up screen and getting a time-limited exclusive right to distribute on-site terminals through their hospital-based sales forces. They also have influence on our system development and a head start on the learning curve of a significant new marketing medium.

Competitive risk is minimized by keeping the development stage secret, launching an aggressive and pre-emptive "first-strike" market strategy to gain early market-share (control of the "Physician Desktop"), and retaining that market-share through our dedication to membership/customer service, our large installed-base of dedicated on-site terminals, and medical society sponsorship. Our launch strategy leverages our pre-emptive "First-Mover Advantage" over potential competitors. Control of the "Physician Desktop" creates a significant barrier to potential competition. And, as a comprehensive national medical information & communications network dedicated to the needs of physicians, readily accessible, easy-to-use, and free-of-charge, *Physicians' Online* presents a formidable barrier to potential competition.

Our Competition

The introduction of *Physicians' Online* has a significant impact on five distinct groups --

- I   MEDLINE Providers,
- II Consumer Online Services,
- III Medical Online Services,
- IV Pharmaceutical Marketing Media
- V   Pharmaceutical Micromarketing Industry

Our future is largely dependent on how effectively we anticipate and pre-empt competitive responses and our ability to establish symbiotic relationships.

I - MEDLINE Providers

MEDLINE is an information product created and maintained by the National Library of Medicine (NLM). NLM's mission is to improve patient care by having MEDLINE widely used by physicians. Although access to MEDLINE is provided via NLM's own network (MEDLARS) and dedicated communications software (Grateful MED), NLM also licenses MEDLINE to commercial online networks, CD-ROM distributors, and private institution-based networks.

The five major commercial online providers include --

- *Maxwell Online* (BRS Information Technologies),
- *PaperChase* (Beth Israel Hospital),
- *Dialog/Knowledge Index* (Knight-Ridder),
- *Medis* (Mead Data Central), and
- *US HealthLink.*

MEDLINE is also available from several CD-ROM distributors including --

- Aries Systems,
- SilverPlatter,
- Dialog,
- BRS,
- Cambridge,
- EBSCO,
- and others.

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Current vs Potential MEDLINE Market Size

Since the NLM is not authorized to release the breakdown figures of licensing fees paid by
private information vendors, the total MEDLINE market size must be estimated.

> In 1991, NLM collected MEDLINE licensing fees for a total of 876,000 online hours
> from commercial networks. NLM's own system provided an additional 324,000 hours
> of MEDLINE service, but since most physicians use Grateful Med software when they
> use the NLM's system (which reduces online "connect" time to 1/4 of the total time
> spent doing a search), the NLM really provided over 1,000,000 hours of online
> MEDLINE. 3729 CD-ROMs were sold domestically in 1991. We estimate these CD-
> ROM systems contributed at least another 500,000 hours of MEDLINE use. NLM also
> provides unlimited-use site licenses to a few institutions, so it is not possible to
> estimate their contribution to total MEDLINE demand.

Since most MEDLINE searching is done either by physicians themselves (70%) or for
physicians by librarians (25%), we know the total physician demand for MEDLINE in 1991
was around 3,000,000 hours. Commercial online systems charge $18 to $45 per hour and
CD-ROM systems cost from $700 to $3000 per year. So the total MEDLINE revenue
collected in 1991 was somewhere between $35 and $45 million.

MEDLINE Market Size

	Current	Potential
Physicians using MEDLINE	50,000	>500,000
Physicians with personal online search accounts	35,000	>500,000
% Searches done by physicians themselves	70%	100%
Total MEDLINE use (hr/yr)	3,000,000	>10,000,000

As discussed earlier, several factors limit the use of information resources by physicians
including -- cost, ease of use, accessibility, physician time, and physician awareness. These
are the same barriers that limit MEDLINE use. The gradual erosion of these barriers has
lead to a steady growth in MEDLINE use and physicians are doing more of their own
literature searching. Medical schools and hospital training programs are now required by
certifying boards and credentialing committees to make computerized literature searching available
on-site.

Current Growth in MEDLINE Use

The NLM has issued 31,000 search accounts to physicians as of April, 1992. Growth rates in MEDLINE use can be estimated by examining the number of searches performed on NLM's system by year. Note the accelerating annual growth rate in MEDLINE use -- from 11% in 1989 to 33% in 1991. This trend suggests that *Physicians' Online* will facilitate MEDLINE growth on top of a pre-existing growth spurt.

MEDLINE Searches by Year
(NLM system only)
(% = annual growth)

Year	1989	1990	1991
Annual growth	11%	16%	33%

MEDLINE Market Segments

Segment	Description	# MD	% MD
1	Physicians currently using MEDLINE themselves.	50,000	8 %
2	Physicians currently using MEDLINE search intermediaries.	50,000	8 %
3	Physicians not using MEDLINE but have access to computers.	150,000	25 %
4	Remaining high-priority physicians as identified by the pharmaceutical industry.	50,000	8 %
5	Remaining physicians.	300,000	50 %

Each MEDLINE market segment differs in terms of its computer-sophistication, previous exposure to MEDLINE, and ability to use MEDLINE and other computerized information resources in medical practice. A different approach is needed to market to each segment. These marketing issues, as well as other ways to segment our physician market, are addressed in detail in our *Physician Marketing Plan*.

Online Pricing Strategy and MEDLINE Demand

In the consumer online services industry, total market size can be measured in terms of total online hours. However, total online hours are really created by the number of users and their individual usage rates.

For online systems, there are basically three approaches to pricing --

- Pay-as-You-Go (or Fee-Per-Use),
- Fixed-Fee-for-Unlimited-Use, and
- Free with Advertising Support.

"Pay-as-You-Go" is a constant disincentive to any user. The clock is constantly running up the fee. To minimize expense, individuals try to limit online time by careful planning before getting online or using programs that automate online activities through pre-processing (CompuServe's *Navigator* and NLM's *Grateful MED* are two examples). This pricing method is a constant drag on a growing market.

"Fixed-Fee" strategies are designed to attract high-volume users (market-share), not increase the total number of users. The fixed-fee pricing remains a barrier to casual users, but for established high-volume users, the savings are obvious. Users are now free to work online without the pressure of a running up a large bill. On one hand, total market size is increased in terms of increased total use. One the other hand, total revenues are depressed and the number of new users hasn't increased.

"Free" strategies which link online service to other revenue sources such as advertising do the most to increase total market size by both increasing the use per user and the number of users. All high-volume users start as casual users. Once price is removed as a barrier, then the underlying utility of the service becomes the major force limiting its utilization.

Alternative Online Pricing Strategies

Pricing	Individual Use	Number of Users	Total Demand
Pay as You Go	↓	↓	↓
Fixed Fee	↑	↓	↔
Free with Advertising	↑	↑	↑

Clearly, there is enormous growth potential for MEDLINE use by physicians. As noted previously, the gradual erosion of several key barriers are contributing to the current growth. In the past, usage fees have been the major factor limiting MEDLINE growth. As with other online systems, the same pricing issues apply to the MEDLINE market. While there is still tremendous growth opportunity in the MEDLINE market, both in terms of individual use and number of users, current MEDLINE providers are competing over existing high-volume users through price-cutting without increasing the number of causal users. So at a time when MEDLINE use is taking off, total MEDLINE revenues are actually falling. By offering MEDLINE for free, *Physicians' Online* will capture most of the existing MEDLINE users as well as create an expanded market by converting non-users into users.

The Vulnerability of Online MEDLINE Providers

Online MEDLINE Source Comparison

ONLINE SERVICE	SEARCH PERFORMANCE		USER INTERFACE	PRICE	VALUE
	Speed	Quality	Ease of Use		Perform:Price
MedLars Grateful Med	XX X	XX XXX	X XXX	$$$$ $$	X XX
BRS PaperChase Dialog Medis	XXX XXX XXX XXX	XXX XXX XXX XX	XXX XXX XX X	$$$ $$$ $$$$ $$$	XX XX X X
US Healthlink	XXX	X	XXX	$$	X
Physicians' Online	**XXX**	**XXXX**	**XXXXX**	**FREE**	**XXXXXX**

Without pharmaceutical advertiser support or technical advantage, only a loss-leader coupling of MEDLINE to other online products or services can effectively compete with *Physicians' Online*. However, since MEDLINE is currently over 70% of the demand for these services, it is unlikely that any other product or service could generate sufficient revenue to support this approach.

Medical Online Services Comparison

PRICE/VALUE Comparison

Price — Value axes; Negative Performance / Positive Performance regions with: Dialog, Meds, BRS, MEDLARS, PaperChase, Grateful Med, US Healthlink, **Physicians' Online**

The Vulnerability of CD-ROM MEDLINE Providers

MEDLINE Source Comparison: Online vs CD-ROM

MEDLINE Source	NO Start Up Fees	NO Expensive Equipment	NO Fee Per Use	NO Subscription Fees	Current Automatic Updates
ONLINE	✔	✔		✔	✔
CD-ROM			✔		
Physicians' Online	✔	✔	✔	✔	✔

The CD-ROM MEDLINE market exists only because of the expense of online systems. CD-ROM systems require substantial initial hardware expense and ongoing expense for subscription updates. However, these expenses are fixed and not related to usage so they offer the most savings to high-volume MEDLINE users. Online systems have lower start-up costs and higher per use fees, so online systems offer lower overall cost to low-volume users. CD-ROM systems tend to be most cost-effective for institutions while online systems tend to be most cost-effective for individuals.

In recognition of this fact, CD-ROM vendors have sought to differentiate themselves with other value-added features such as text-retrieval performance, ease-of-use, and Graphical-User-Interfaces. However, by eliminating the cost of MEDLINE and adding our sophisticated, yet easy-to-use, graphical search interface, *Physicians' Online* eliminates the CD-ROM's main competitive advantages over online systems. MEDLINE will have to be bundled as a loss-leader with other CD-ROM products in order to remain competitive. Again, lack of demand for these other products makes this a nonviable option. Only some institutional sites and heavy-users with substantial investments in existing hardware and software will remain a possible CD-ROM MEDLINE market.

NLM vs Physicians' Online

NLM is not ultimately threatened by *Physicians' Online* since our missions are complementary -- to increase total MEDLINE use. By making MEDLINE readily accessible, easy-to-use, and free-of-charge, we significantly increase the total MEDLINE market size and the NLM shares in our success with increased total licensing revenue.

Summary

Clearly, *Physicians' Online* presents the most immediate threat to commercial MEDLINE vendors. We effectively challenge these current products based on the high-quality of our MEDLINE product, with its simple, yet sophisticated, search interface and its price (FREE). Our user-friendly graphical PC software, additional online products & services, and our dedicated on-site terminals further leverage our competitive position and c. ... additional barriers to protect our share of the "Physician Desktop."

We have a clear "First-Mover Advantage" by having a pharmaceutical advertising support mechanism in place as well as a technical development lead time. Our technical lead time is further preserved by our exclusive software development arrangement with ConQuest Software Technologies. ConQuest is the current technical leader in the text-retrieval market. Their sophisticated text-retrieval software out-performs all traditional Boolean systems and they have a technical lead time over rival text-retrieval systems of 2 to 3 years with their patented software technology.

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II - Consumer Online Services

The Big Three

The consumer online services market is both emerging and highly competitive. What was once a relatively fragmented industry has coalesced into an industry made up of three large, mass-market information services. The "Big Three" include *Prodigy, CompuServe,* and *America Online.* Each has hundreds of thousands of individual subscribers and draws their substance from hundreds of information providers and distributors.

America Online, although the smallest of the three, is the clear technical leader. It has a sophisticated and easy-to-use Graphical-User-Interface (GUI) which is mouse and menu driven and which runs smoothly on Windows, Macintosh, and DOS. *Prodigy* and *CompuServe* are both developing similar interfaces to compete with *America Online.*

Consumer Online Market Share
(membership estimates for 1992)

Other 5%
America Online 7%
Prodigy 33%
Genie 14%
CompuServe 41%

Source: Alex. Brown

Mass Market vs Niche Market Strategies

Following a traditional "publishing" business model, the Big Three offer a wide variety of low-value/low-cost information products designed to capture the widest range of users possible. Marketing strategies are directed toward increasing both market-share and market size (increasing both the number of users and their individual use).

While the Big Three are battling over the emerging mass-market, other online services (such as Dialog, Delphi, Lexis, BRS, PaperChase, Newsnet, Dow Jones) are quietly capturing niche professional markets. These services offer high-value/high-cost specialized information products that service specific needs of carefully targeted users. On a financial basis, targeted media consistently out-perform mass market media. This is because the information provided is more valuable to the target audience and the advertising is more valuable to companies targeting that audience.

Window of Opportunity: The Medical Niche

Following a similar niche market strategy, *Physicians' Online* offers high-value/high-cost information products to a specific high-value target audience. *Physicians' Online* doesn't present an immediate threat to the current crop of commercial online systems. However, the window of opportunity to capture our niche market may narrow if the Big Three shift their marketing strategies from mass markets to niche markets of higher value information products and services.

Although we have both a technical edge and pharmaceutical marketing support mechanism in place, these companies have deep pockets and many other products and services they could bundle or use as loss-leaders. We will use our lead time to leverage our "First-Mover Advantage" to control the "Physician Desktop" and erect effective physician market barriers.

III · Medical Online Services

AMA/NET

Several previous attempts to create online information services for physicians are now defunct, including MINET, PHYCOM, and AMA/NET. In 1981, MINET (Medical Information Network) was announced by GTE Telenet. In 1983, MINET went online and offered three primary services -- MEDMAIL, PHYCOM, and AMA/NET. MEDMAIL was essentially a repackaging of GTE's TELEMAIL service for the medical profession. PHYCOM was a pharmaceutical advertiser-supported online service that failed to develop any products or services that could attract physician use. AMA/NET offered a comprehensive menu-driven package of high-quality but hard-to-use services and databases designed to appeal to physicians. MINET and PHYCOM quickly died from lack of physician demand due, in part, to the immature PC market. With the AMA's financial backing, AMA/NET lingered on until 1990, when the AMA claimed it could no longer justify shouldering the ongoing losses.

One can argue that the AMA abandoned AMA/NET prematurely. The AMA was certainly well-positioned to leverage its large membership and computer use by physicians was clearly on the rise. However, AMA/NET never had more than 40,000 members -- and less than 5,000 were ever "active" (i.e., used the system more than once). Why? Because AMA/NET was a "Fee-per-Use" network -- with charges ranging from $38 to $42 per hour!

US HealthLink

With the demise of AMA/NET in August 1990, there were no online services dedicated to the medical profession until the Spring of 1992. Hard-core physician-users still had the MEDSIG Forum on CompuServe, but it's relatively expensive and doesn't offer information products and services designed to appeal to most physicians.

Then, in the Spring of 1992, a resurrected version of AMA/NET, renamed US HealthLink, went online. No longer affiliated with the deep pockets of the AMA, US HealthLink is set up as a cooperative venture between the Oregon Health Sciences University (OHSU) and the IEI Network, Inc., an organization formed by former AMA/NET staff. Otherwise, US HealthLink appears identical to the old AMA/NET. When a user signs on to US HealthLink, he is greeted by the same old "klunky" interface and the same comprehensive, but hard to use, package of services and databases. The list includes MEDLINE, EMPIRES Literature Service, MEDICOM Drug Interaction Service, COMTEX Medical News Service, Bulletin Boards, Electronic Mail Service, Clipping Service, etc. In addition, there is a selection of services from the MGH/Harvard computer network including DXplain, a diagnostic decision-support tool developed at MGH.

The MEDLINE offered is a stripped-down version developed by OHSU. It has a clumsy interface and only offers abstracts back to 1987 (A complete version of MEDLINE would go back to 1966). EMPIRES (Excerpta Medica Physicians Information Retrieval and Education Service) Literature Service is derived from EMBASE, the biomedical bibliographic database maintained by Elsevier Science Publishers. This database is much smaller than MEDLINE -- only covering 320 journals since 1989. However, it has a better search interface than the OSHU version of MEDLINE.

So physicians familiar with AMA/NET feel right at home with US HealthLink. What has changed is the market strategy. Instead of "Fee-per-Use," US HealthLink offers physicians a "Fixed-Fee-for-'Unlimited'-Use" ('Unlimited' here means less than 4 hours per month). US HealthLink charges a fixed $35 per month ($420 per year) for "Core Products & Service" plus

additional fees for "Premium Services" (Support/FaxAlert), Faxes, Full-Text Reprints, Personal Clipping Services, and communications cost in excess of 4 hours per month.

US HealthLink vs Physicians' Online

> The more our system is used, the more money we make ... the more their system is used, the more money they lose!

US HealthLink derives its revenue from a fixed-fee charged monthly to its subscribing physicians. This strategy superficially appears to benefit physicians, however, under closer inspection, US HealthLink does not truly encourage physician use. From US HealthLink's perspective, the most profit is generated by selling monthly contracts (which generate revenue) but never actually delivering the service (which generates cost). And, as discussed previously, this pricing strategy captures market-share of existing high-volume users, but does nothing to attract new or casual users.

Physicians' Online offers the same products and services as US HealthLink, albeit at much higher-quality and for FREE with advertising. Cost is no longer an issue. Since advertisers are charged only if the ads are actually viewed ("Pay-per-View"), the more physicians use the system, the more money *Physicians' Online* makes. In other words, we are motivated to make our system more useful and responsive to our members needs. US HealthLink makes money selling monthly contracts to physicians who don't use the system. We make our money when our system is used.

Although US HealthLink is a competing full-service online information system designed for physicians, *Physicians' Online* has several key advantages, including --

(1) Our MEDLINE is complete and has the best search interface on the market.

(2) Our on-site terminals make *Physicians' Online* conveniently accessible.

(3) Our dedicated communications software is a user-friendly "Graphical-User-Interface" (GUI).

(4) Our reliance on "Pay-per-View" advertising, rather than membership fees, enables *Physicians' Online* to profitably encourage use by *every* physician - new and causal users, as well as high-volume users.

(5) Our system delivers superior product, performance, and service and is priced to be free-of-charge with advertising or competitively priced without advertising.

(6) Our system has the backing of professional societies.

(7) Our system delivers its service to "members" not "customers."

US HealthLink provides a favorable focus for comparison and allows us to "piggyback" our membership marketing efforts. Since US HealthLink subscribers pay monthly, not annually, there is no penalty for switching immediately to *Physicians' Online*. Without a major technical overhaul to improve their user-interface, overhaul their MEDLINE module, and shift their market strategy to an advertiser-supported system, we expect to acquire most of their subscribers.

US HealthLink has approximately 5,000 members and has established a gateway connecting an additional 2,000 Physician Computer Network (PCN) members. *Physicians' Online* is well-positioned to capture the US HealthLink customer-base, in part, because we have an implementation lead time of at least six to twelve months that provides ample time to erect the required barriers. In addition, US HealthLink may be constrained contractually, financially, and bureaucratically by their OHSU relationship.

Features: US HealthLink vs Physicians' Online

Feature	US HealthLink	Physicians' Online
Cost	$420 / year	FREE
Free online time	up to 4 hrs / month	unlimited
Complete MEDLINE	NO (1987 to present)	YES (1966 to present)
Boolean Search Interface	YES	YES
Graphical User Interface	NO	YES
Mouse / Key Control	NO	YES
NLP Search Interface	NO	YES
Relevance Ranking	NO	YES
MEDLINE Journal Club	NO	YES
Free Clipping Service	NO ($10 / folder / month)	YES (unlimited folders)
Diagnostic Decision-Support	DXplain	QMR
Disease Synopsis	DXplain	QMR
Drug Interactions	MEDICOM	USP
Complete Drug Information	NO	YES
Full Featured BBS	YES	YES
Menu Driven	YES	YES
Electronic Mail	YES	YES
Advanced FORUM Features	NO	YES
"Live" Conference Rooms	NO	YES
Text File Downloading	YES	YES
Software Downloading	NO	YES
Uploading Supported	NO	YES
FAX options	YES	YES
Topical Forums	YES	YES
Medical Society Boards	NO	YES
Pharmaceutical Company Support Boards	NO	YES
24 Hour Support Line	NO	YES
Online Help	YES	YES

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<u>Physician Computer Network (PCN)</u>

Physician Computer Network (PCN) is attempting to establish a nationwide network linking office-based physicians electronically with a variety of health-care organizations. As stated in their Second Quarterly Report for 1992: Physician Computer Network, Inc. —

> operates a national, interactive, two-way and verifiable electronic communications Network linking its office-based Physician Members and the healthcare industry. This interactive Network provides both physicians and healthcare organizations, such as hospitals, clinical laboratories, Medicare, insurance carriers, pharmaceutical manufacturers, managed care providers and others with a cost-effective means of information exchange which enhances practice administration and increases productivity...Our goal remains to create the largest, on-line and interactive Physician Network in America.

As originally conceived, PCN offered physicians a complete medical office management system – including software, hardware, training, and support – free-of-charge. In return, physicians were required to view 90 minutes of interactive advertising per month and allow PCN to retrieve confidential patient information for resale as "anonymous, aggregate clinical data."

<u>The Four Related Business Segments of PCN</u>

    1 - NETWORK SERVICES
        PCN offers a comprehensive medical office management system designed to computerize patient records and to generating patient billing, insurance claims billing, and wide variety of financial and clinical reports.

    2 - INTERACTIVE MEDIA
        PCN offers the pharmaceutical industry an interactive, verified, "Pay-per-View" advertising vehicle that physicians are forced to view for 90 minutes each month.

    3 - COMMUNICATION DATA-LINKS
        PCN offers an online network connecting physician offices to other health-care organizations including -- hospitals, clinical laboratories, managed health-care providers, claims clearinghouses, and insurance companies.

    4 - CLINICAL MARKETING DATA
        PCN offers clinical data and market research gathered from the physicians' patient records for purposes of obtaining health-care treatment practices and observational & post-marketing surveillance reports about pharmaceutical products.

<u>Market Resistance to PCN</u>

Founded in 1988, the PCN concept attracted strong backing from IBM, several pharmaceutical companies, Lehman Brothers, and others. Four years and $50 million later, there are still less than 2,000 installed systems and PCN is running out of money. In addition, PCN continues to receive a cool reception from physicians. Why ?

    (1) Physicians resist using any media that forces them to view advertising. PCN insults physicians by requiring them to spend 90 minutes per month viewing advertising and taking quizzes on the ads viewed.

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(2) Busy physicians value their time as much as their money. So the financial savings have to be substantial for physicians to eagerly sign-up for the privilege of viewing 90 minutes of advertising per month.

(3) The PCN medical office system differentiated itself from competition based on price alone. Who are PCN's competitors? A rapidly growing and highly competitive medical office system market that offers many inexpensive and high-quality alternatives to PCN. Over 50 major medical office systems are available from well-established companies with a combined installed-base of over 50,000 users. These software packages are distributed and serviced by the growing legions of small service-oriented medical office system companies. These small "Value-Added-Resellers" (VARs) specialize in the medical office system market and offer customized packages of hardware and software to meet the individual needs of their client physicians. These local vendors offer a personal approach to customization and service. Vendors can take advantage of the wide variety of high-quality low-cost alternatives to IBM hardware (computers, drives, monitors, printers, etc.) and pass these savings on to their client physician. In short, they bundle hardware, software, customization, training, service, and ongoing support, as complete system solutions that effectively compete with PCN in terms of price and quality.

(4) PCN has targeted high-patient volume practices. For large practices, computerization pays for itself. Custom computer solutions are a small fraction of overall practice costs. Savings are immediately realized through better practice management and financial controls. Revenue growth is realized through improved claims processing and patient accounts tracking. So, for high volume practices, the small savings afforded by PCN is a false economic benefit. Large practices can not afford to not have the best possible computer system customized to their individual practice needs. And with the proliferation of lower-cost medical office systems, computerization is cost effective even for solo-practices. Small local service-oriented vendors are best positioned to met the medical office system needs of physicians and are the major threat to PCN.

(5) PCN preys on the widespread computer ignorance of physicians. PCN offers a single solution to simplify choice for busy physicians. Although a simple choice, PCN is not the best choice. Computer savvy physicians realize there is no simple solution. A computer system must meet the unique requirements of each physician. Fortunately, computer ignorant physicians are not isolated from the computer-sophisticated. Physicians are rapidly becoming more computer-savvy, in part, reflecting the computerization of society in general. And, as discussed before, physicians are trained to use their peers as an information resource. If a physician feels uncomfortable with computer technology, he will rely on peers with more computer knowledge to guide his purchase decisions. Physicians who have become early adopters of computer technology have a tremendous influence on their peers and the future direction of medical computing in general. Therefore, by failing to win the enthusiasm of computer-sophisticated physicians, PCN has lost tremendous market leverage.

(6) Since PCN's introduction, more strings have become attached to the "Physician Member Agreement." Today, in addition to the 90 minutes of mandatory advertising viewing each month, physicians must pay up to $2,760 per year and sign a guarantee to continue lease payments should PCN fail. Where's the incentive?

(7) Finally, physicians avoid any activity that potentially violates patient confidentiality. As stated in their annual report: "PCN, by virtue of our Physician Member Agreement, has the right to market the anonymous, aggregate clinical data contained in the databases of its Physician Members."

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How can patient confidentiality be preserved if PCN has regular access to patient records? And even if PCN could convince physicians that confidentiality is preserved -- Can PCN convince the public? Do physicians really want patients to know their personal medical records are being traded for some computer equipment? For most physicians, it's just not worth it. These controversial ethical issues have irreparably distanced PCN from the public, the medical profession, and the pharmaceutical industry.

PCN: A Viable Advertising Medium?

Initially, *Physicians' Online* competes only with the INTERACTIVE MEDIA segment of PCN. Strangely, this is the most underdeveloped portion of PCN. A viable advertising medium must combine both --

      (1) an *information component* (content) -- tailored to the needs of a target audience and

      (2) an *advertising component* -- tailored to the needs of advertisers targeting the same audience.

As previously mentioned, PHYCOM was a failed attempt to establish an advertiser-supported online network because it failed to develop any information content other than advertising. Similarly, PCN has a powerful advertising component without providing any information content. In fact, the primary user of the system is the physician's office staff, not the physician. So how can you get physicians to view advertising without delivering information content? PCN "solves" this problem by contractually obliging physicians to view their ads. Basically, PCN pays physicians to view advertising. This heavy-handed approach is direct but creates a medium that has no content other than coercive advertising.

Physicians' Online takes a more traditional approach to attracting its audience. By providing physicians with information products and services they can use, *Physicians' Online* use becomes a natural component of the health-care delivery process. By moving to the background and being targeted to the individual user, *Physicians' Online*'s advertising is transformed into another useful information resource that is always available when needed -- not a 90 minute interruption every month.

Network Building Strategy

While both PCN and *Physicians' Online* share an ambitious mission, the real issue is -- "How to get there?" Two distinct network building strategies have emerged -- PCN vs *Physicians' Online*.

The PCN strategy relies on the installation of complex and costly office management systems that link physician offices to the PCN network. These systems are primarily used by office staff. Physicians only use the system for the mandatory monthly viewing of advertising. While this strategy produces contractually captive customers with high system-switching costs, their competitors have a large installed customer-base with similar high system-switching costs. Since PCN's ability to capture existing market-share is limited, PCN is forced to compete with many well-established medical office system vendors in order to capture a share of the remaining physician offices yet to be computerized. With a limited number of captive physicians, PCN faces an uphill battle in attracting the many participants and the capital needed to establish a true national medical information & communications network.

The *Physicians' Online* strategy relies on the installation of simple and low-cost software in *existing* computer systems and the placement of low-cost and easy-to-use dedicated terminals at convenient sites in the health-care environment that link to the *Physicians' Online* network. *Physicians' Online* is used exclusively by physicians and provides information & communication services *on demand* and *at point-of-need*. *Physicians' Online* provides a very attractive alternative for the existing installed-base of competing online information

providers who currently face low switching costs. In turn, *Physicians' Online* creates high customer switching costs due to its pricing, technology, products, alliances with multiple organizations, CME credits, membership services, and support. With an ability to serve every practicing physician, *Physicians' Online* can attract the critical mass of participants and capital needed to establish a true national medical information & communications network.

Physician Market Strategy: PCN vs Physicians' Online

	PCN	Physicians' Online
Founder Background	Advertising	Medicine
Primary System Use	Office Management	Clinical Information
Primary User	Office Staff	Physician
Online Advertising	Dedicated Interactive Advertising Sessions	Shown simultaneously with any online product or service
Primary Physician Use	Mandatory Viewing of Ads	Elective Information Retrieval
Sophistication of Initial Users	Low	High
Advertising Price	High	Low
Cost to Users	up to $2,760/yr	Free
Ad Exposure / User	Limited	Unlimited
Potential Audience Size	15,000 Office Systems (Stated company goal for 1995) (< 2% of Physicians)	Every Physician (>500,000) (100% of Physicians)
Potential Users / Computer	1	Unlimited
Company Investment / User	$ Thousands	Negligible
Ad $ / Hr / User to Break-even	$ Hundreds	$<10
Multiple Market Strategy	Competitive	Alliance Building
Medical Office System Market Positioning	Competitive	Complementary

Additional Obstacles for PCN

PCN's stated goal is to install over 15,000 office systems by 1995. Even if PCN manages to convince enough physicians to sign-up, serious obstacles remain --

(1) Management distraction due to recurring financial restructuring requirements.
(2) Loss of flexibility due to complex financial structure.
(3) Limited financial capability due to excessive debt and impending liquidity crisis.

(4) Existing bad-will with "stakeholders" -- including physicians, pharmaceutical companies, data-link partners, and investors.

Stakeholders	Issues
Physicians	• Financial Commitment • Public Relations • Ethical Issues regarding confidential patient data • Coercive and Insulting Advertising Format
Pharmaceutical Companies	• Failure to meet charter sponsors' expectations • Limited Market Penetration • Financial Wherewithal
Data-Link Partners	• Warrants issued have lost value • Viability: New Program Credibility • Financial Wherewithal
Investors	• Deteriorating stock price • Impending defaults on debts • Where will additional capital come from?

In Summary

The key to success for any national online health-care network is to win the support of the medical profession. Using "free" medical office systems as its entry point, PCN has attempted to build physician support through bribery. Due to poor financial performance, PCN has been forced to add physician fees, thereby eliminating the "free computer" incentive. In a highly competitive medical office system market, the PCN system must now compete based on quality and service, not cost. So far, PCN has spent over $50 million to connect less than 2,000 office sites to their network. After spending over $25,000 per office, PCN still has less than 5% of the medical office system market.

As part of its shifting strategy, PCN is now placing a greater emphasis on other network capabilities in order to diversify revenue sources beyond "Pay-per-View" advertising. No wonder. With a network reaching less than 1% of physicians, PCN's ability to build an effective online advertising medium is limited. Without physicians, PCN has no product. To be an effective advertising medium, you need subscribers. PCN's key to success remains -- it must attract more physicians.

In the face of negative publicity, unanswered ethical issues, floundering finances, and a cool reception by physicians and the pharmaceutical industry, Physician Computer Network has a precarious future. However, PCN's difficulties provide *Physicians' Online* with valuable lessons and validate our unique physician market strategy.

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We foresee that, due to --

> (1) the large Net Operating Loss carry forward of $50 million,
> (2) existing contracts with service providers, and
> (3) small but significant installed-base of users (less than 2,000)

at some point, PCN could be an attractive acquisition target for *Physicians' Online*.

Medical Society Online Systems

Most medical societies are exploring ways to offer online bulletin board systems (BBSs) for their members. Although more cautious than the AMA, the American College of Physicians (ACP) has been a leader in this area. They have been influential in dramatically improving the quality of medical abstracts found in MEDLINE by creating a logical format which is now the standard followed by most medical writers. They recently started RESNET, a online system for medical residents that uses a subset of the CompuServe system. In April 1992, the ACP introduced the "ACP-NLM Flat Fee Program." ACP members can have virtually unlimited access to the NLM network via Grateful Med software for only $200 per year. Although plans have not been made public, ACP was recently granted a trademark for "ACP Online." Clearly they are preparing for a more comprehensive online system.

As AMA/NET clearly demonstrated, medical society online systems face the same barriers to success as other online systems. *Physicians' Online* enables medical societies to safely establish their own online systems on our network. For a participating medical society, we develop and maintain their Medical Society Forum on *Physicians' Online*. Medical Society Forums are complete BBS systems and have all the same features available on *Physicians' Online* including their own membership, E-mail systems, bulletin boards, libraries, etc.

Note: Medical society support for *Physicians' Online* does not imply medical society endorsement for online advertising. *Physicians' Online* functions the same whether or not the advertising-support features are turned on. The choice of whether or not to turn on the advertising is left for the individual physician to decide. Physicians may chose to turn off the advertising features at any time and assume the cost of services provided.

IV · Pharmaceutical Marketing Media

Pharmaceutical Marketing Market

In 1991, $63 billion of prescriptions were written by less than half a million physicians -- over $150,000 per physician. Pharmaceutical companies currently spend approximately $5 billion dollars annually on the sales and marketing of drugs and an additional $2 billion dollars on the distribution of free drug samples -- over $15,000 per physician. These marketing and sales activities include --

> • sales calls to physicians by manufacturers' sales representatives,
> • professional journal advertising,
> • direct mail and telemarketing communications to physicians,
> • distribution of free drug samples to physicians,
> • marketing and sales research, etc.

The largest prescribing specialties are internal medicine, family practice, general practice, and cardiology. Together, these specialties accounted for over half the prescription sales in 1991. In 1961, there were 656 drugs available by prescription in the US -- today there are over 8,000. This has created a marketing "din," as a plethora of products are vying for the limited attention of busy medical professionals. Increasing competition, falling profit

margins, and increasing marketing costs have created an acute need for more careful market segmentation and targeting of pharmaceutical marketing campaigns.

Current Pharmaceutical Marketing Mix

Physicians' Online competes with other advertiser-supported media to secure a share of the pharmaceutical marketing pie. Our objective is to establish *Physicians' Online* advertising as a generally accepted part of the standard "Pharmaceutical Marketing Mix." Our medium is positioned to complement, not compete, with other media in the overall pharmaceutical marketing mix.

The Current Pharmaceutical Marketing Mix

Field Reps   TV   Radio

Medical Journals   Magazines

Direct Mail   Newspapers

Brochures   Friends

Drug Samples — **PHYSICIAN** — Peers

Conferences   General Climate

Clinical Trials

Telemarketing   Patients

Surveys   Ad Specialties Gifts Services   Word of Mouth

The extremely competitive nature of pharmaceutical marketing assures rapid acceptance of any new medium that effectively targets physicians. Pharmaceutical marketing appears to be ruled by a herd psychology: "So go the Competition -- So go We." Pharmaceutical companies can not neglect any marketing method that might give competitors an edge.

The merest possibility of a new medium attracts widespread interest by the pharmaceutical industry. Witness *Medical News Network* (MNN), scheduled for launch in the Spring of 1993, Whittle Communications claims to have raised over $100 million in pharmaceutical advertising commitments for this new multimedia project. To date, MNN can't claim a single physician user. And, even in the face of negative publicity, unanswered ethical issues, floundering finances, and a cool reception by physicians, *Physicians Computer Network* (PCN) successfully completed an IPO for $36 million in 1991. PCN has already spent over $50 million to connect less than 2,000 office sites to its network -- over $25,000 per physician!

So, new media products will continue to proliferate as long as there remains such a large market opportunity. The media companies that serve this industry are well-capitalized. They are all well-positioned to leverage their existing pharmaceutical client-base to sponsor new media opportunities as they arise.

As a relatively undercapitalized "dark horse" entrant, *Physicians' Online* must leverage its "First-Mover Advantage" by rapidly creating barriers to ward off these well-positioned and well-capitalized competitors. Only one barrier can really protect us --

a completely satisfied physician membership.

The key to our success is <u>ABSOLUTE DEDICATION TO "CUSTOMER" SERVICE</u> --

(1) Physicians must feel like "members" not "customers."

(2) Physicians must view *Physicians' Online* as a quality information service that maintains the integrity of its information products and clearly separates the needs of physicians from the demands of pharmaceutical advertisers.

(3) We must nurture our ongoing member relations by offering only the highest quality products, services, and support.

Our satisfied members become our most potent marketing weapon by recruiting new membership, leveraging our marketing into new clinical sites, and securing our market-share against future competition. ("Why switch? *Physicians' Online* is great, friendly, free, and ours." "How many high-quality, free-of-charge, medical information services do you need?")

As a national "medical information utility," our goal is to position *Physicians' Online* as a "natural monopoly" by leaving no opportunity for competition to exploit. A steady stream of new products & services, dedication to membership service, professional society endorsements, and a large installed-base of on-site terminals make *Physicians' Online* difficult to duplicate, even for large well-heeled media companies.

<u>Whittle Communications' Medical News Network (MNN)</u>

While little detail has been revealed about Medical News Network (MNN), company officials confirm that Whittle will begin pilot testing an advertising-supported "News and Continuing Medical Education" system for physicians in the spring of 1993. This non-interactive broadcast information system will be delivered via television to the physician's office.

Consistent with Whittle's previous efforts, MNN will be an extremely costly endeavor with the most significant investment being in the areas of programming and broadcasting. It appears the system will broadcast its programming in a flexible format similar to "Pay-per-View" television in order to register physicians for CME credits and audit audience participation. Presumably, MNN will match its advertisers with their intended audience.

<u>Potential Obstacles for MNN</u>

While Whittle has pre-sold all the advertising slots for the first year, MNN faces a number of physician and advertiser acceptance issues --

(1) Given the peripatetic nature of patient care, the physicians' office may not be the most suitable place for such viewing. In fact, physicians may prefer to continue to receive such programming through the existing lunch or vacation conference formats.

(2) Physicians may prefer to earn CME credits in a more interactive or self-directed educational environment.

(3) If physicians can't flexibly schedule MNN viewing to coincide with their busy schedules, this system will fail from lack of viewers -- indicative of yet another advertiser-supported service that was insensitive to the needs of physicians.

(4) Since all the advertising space for the first year is sold-out, many companies will be excluded from participation. This exclusion creates an opportunity for another competitor, like *Physicians' Online*, to attract interest.

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An Expanded Market Opportunity Created by MNN

Given the cost of developing and maintaining the MNN system and given that the system requires changing physicians' habits, it is not clear MNN will prove cost-effective for advertisers. While MNN publicity will increase general awareness of alternative media and promote pharmaceutical company acceptance of new media, *Physicians' Online*, with its cost-effective micro-marketing approach and sophisticated precision-targeting features, will greatly benefit from Whittle's investment and educational efforts.

V - Pharmaceutical Micromarketing Industry

Emerging Pharmaceutical Micromarketing Industry

Pharmaceutical marketing in the 1990s is trending towards micromarketing. The four characteristics making the pharmaceutical market conducive to micromarketing are:

(1) *measurability* – the potential and actual market size of the specific drugs being marketed can be determined;

(2) *accessibility* – physicians, the purchasing decision maker in this industry, can be targeted;

(3) *profitability* – pharmaceutical companies spend $7 billion annually in the US on sales and marketing and drug sampling; and,

(4) *stability* – the pharmaceutical industry is recession-resistant.

The principal objectives of micromarketing and sales research information are –

(1) to enable pharmaceutical manufacturers to *compensate* their sales representatives based on geographic sales or prescription activity,

(2) to *quantify* individual product sales and prescription levels, and

(3) to *direct* their marketing and selling activities to specified or selected groups of physicians.

Currently, approximately $500 million annually goes towards the purchase of prescription-drug information. Two companies have historically dominated the prescription-drug information market: IMS and Walsh International. Both companies offer drug-information products based on pharmaceutical sales data segmented by zip code. In other words, they provide prescribing information that is aggregated geographically, not at the individual physician level. This creates a market opportunity for prescriber-level data.

MMG (Medical Marketing Group) and PMSI (Pharmaceutical Marketing Services, Inc. – a Walsh International spin-off) are both emerging companies that are setting new standards in pharmaceutical micromarketing. They have both developed physician-specific profiling databases. By slicing their data in a variety of ways, they have developed r series of useful marketing information products that enable pharmaceutical companies to direct their efforts to influencing the prescribing habits of specific physicians. These sophisticated pharmaceutical marketing support tools, based on prescription data, track the prescribing behavior of any targeted market segment down to the individual physician.

Limited Supply of Media Targeting Specific Physicians

While these new prescriber-level marketing tools provide a powerful means to target pharmaceutical marketing efforts, the supply of media targeting physicians at an individual level is limited.

Additional Regulatory Considerations Governing Pharmaceutical Marketing Practices

Pharmaceutical marketing practices have come under increasing scrutiny. Pharmaceutical advertising, marketing, and promotional practices have drawn critical fire during recent hearings held before the Senate Committee on Labor and Human Resources. Legislation strengthening the Food and Drug Administration's (FDA) authority to police drug company promotional activities has been proposed.

In an effort to pre-empt the creation of formal legislation by a gesture of self-regulation, the Pharmaceutical Manufacturers Association (PMA) and the American Medical Association (AMA) issued guidelines outlining acceptable and unacceptable promotional practices. Other professional societies, including the American College of Cardiology (ACC) and the American College of Physicians (ACP), have issued similar guidelines.

AMA Ethical Guidelines on Drug Industry Gifts
(adopted December 1990)

Unacceptable gifts
- Cash
- Subsidies for travel, lodging or personal expenses or in compensation of time spent for physicians attending conferences or meetings.
- Payment for token consulting or advisory services.
- Gifts with "strings attached," such as those given in relation to a physicians' prescribing practices.

Acceptable gifts
- Gifts with educational value, such as textbooks.
- Work-related gifts of minimal value: pens, notepads and penlights.
- Subsidies to underwrite the costs of continuing medical education conferences or professional meetings.
- Scholarships for medical students, residents and fellows to attend educational conferences, as long as selection is made by their academic institutions.
- Reasonable compensation and reimbursement of expenses sustained by consultants.
- Modest meals, usually in conjunction with educational programs.

These guidelines have forced the discontinuation of certain practices and the modification of many others.

For example,
> in 1988, $165 million was spent by pharmaceutical companies to pay for physicians and their spouses to attend meetings in resort spots such as Monte Carlo and Palm Springs, complete with entertainment such as cruises and golf outings.

Such practices, as well as cash subsidies, clinical "research" grants, and other valuable gifts "with strings attached," have been dramatically curtailed. Leveling the playing field of "unsavory" marketing practices has freed up marketing dollars to invest in other promotional areas.

The FDA is also being pressured to create stricter regulations regarding the degree of product disclosure information included with pharmaceutical advertising. Several studies have pointed to the lack of adequate product disclosure information and the widespread use of dangerously misleading product messages included in many pharmaceutical marketing campaigns.

How do these regulations effect *Physicians' Online?*

(1) *Physicians' Online* is the only advertising medium that complies with the spirit of FDA disclosure regulations. With *Physicians' Online*, online advertising is not only linked to complete FDA product information but also to relevant medical literature, pharmaceutical detailing databases, independent USP drug information, and fulfillment services.

Currently, prescriber-level information is only useful in --

- directing sales representatives,
- direct mail campaigns, and
- telemarketing efforts.

Prescriber-level targeting tools are available but the supply of true prescriber-level targeted media is limited. In fact, the prescriber-level data market leader, MMG, is attempting an aggressive acquisition strategy designed to increase the demand for their services by creating a new supply of media which target physicians based on their prescriber-level database.

> The need for more careful market segmentation and targeting of marketing campaigns have lead to a proliferation of both traditional and newer non-traditional mediums to reach physicians. Drug companies have provided increased advertising support for newer marketing mediums especially those which target their markets more selectively. This has caused an increasing shift of the $400 million dollars per year devoted to traditional journal advertising, as pharmaceutical firms become increasingly receptive to these newer advertising vehicles. They are actively looking for new means to reach physicians.
>   ("Medical publications under siege from 'new media'" *Publishing News*, May 1990, p. 44.)

This trend is our market opportunity. *Physicians' Online* provides a medium which naturally complements pharmaceutical micromarketing services by providing a true physician-level targeted medium. An alliance with a prescriber-level prescription data provider allows us to strengthen our targeting features by including direct "prescription behavior targeting." In addition to targeting by demographics and context, physicians can also be targeted by their specific drug prescribing practices.

Limited Psychometric Data Sources

Pharmaceutical micromarketing companies are also exploring alternate sources of relevant prescriber-level marketing information other than prescription data --

- (1) to enhance the overall predictive value of their marketing tools and
- (2) to decrease their strategic dependence on providers of raw prescription data.

One approach is to add "attitudinal" or "psychometric" data to their products. However, this data is currently compiled from relatively primitive survey data.

Physicians' Online offers a source of proprietary prescriber-level psychometric data that is continuously generated from online user activity. Our prescriber-level psychometric data can be combined with prescriber-level prescription data to create new marketing tools which not only track but also predict physician prescribing behavior.

New Source for Prescriber-level Prescription Data

Initially, *Physicians' Online* will not enter the prescription data market which is currently dominated by IMS, Walsh, and Medco. However, with the advent of hand-held, pen-operated computers with cellular data network capabiliti. we are well-positioned to offer prescription fulfillment services and thus become an independent source of prescriber-level prescription data in addition to our psychometric data.

Drug Sampling Services

An estimated $2 billion worth of free drug samples are distributed annually via drug manufacturers' sales forces. However, increased Federal regulation requires documentation of the final destination of these samples and forces drug manufacturers to track these samples more closely, thus creating another market opportunity. Through our ad linkages, drug detailing boards, and special E-mail offerings, drug sample fulfillment services are conveniently offered electronically to physicians, thus automating both the fulfillment process and the required record-keeping.

(2) *Physicians' Online* terminals and dedicated software are clearly of educational value, so their distribution by sponsoring pharmaceutical companies doesn't violate any ethical guidelines.

(3) Our online "advertising shell" enables us to clearly distinguish between promotional messages and information products. Our information products are not contaminated, in anyway, by promotional material.

Our Growth Strategy

Online advertising enables *Physicians' Online* to deliver virtually any information product or service, free-of-charge, to physicians, while paying royalties to third-party information and service providers. Our growth is fueled by our strong cash-flow position and our ability to encompass new "micro-information niches" by incrementally adding new products & services and serving new elements in the overall "Medical Information Grid". By connecting medical professionals, pharmaceutical companies, pharmacies, medical information & service providers, hospitals, laboratories, offices, insurance companies, and, ultimately, patients, with a national electronic communications network, *Physicians' Online* becomes a platform-independent "distribution system" which maintains growth by "feeding it" a steady stream of new information products and communication services.

Network Expansion to a Comprehensive Medical Information Utility

Physicians' Online is also well-positioned to leverage its physician membership to exploit the huge market opportunities that will open with the imminent introduction of low-cost, pocket-sized, pen-operated computers able to connect wirelessly to national cellular data networks. Prescription fulfillment services, prescription data, pharmaceutical marketing services, patient laboratory data, insurance claims processing, personal pager services, communications services, FAX networks, etc. will all be within easy striking distance.

Summary

To provide a comprehensive solution to the overwhelming information
retrieval and communications problems of today's physician is both our
challenge and our opportunity.

Physicians' Online is dedicated to serve the information and communications needs of
physicians and the marketing needs of the pharmaceutical industry.

Physicians' Online initially distributes third-party produced information products and
services, on demand, at point-of-need, and free-of-charge, to member physicians while
simultaneously providing the pharmaceutical industry with a sophisticated, cost-effective,
precisely-targetable, fully-accountable, non-coercive, risk-free, "Pay-per-View" advertising
medium.

Physicians' Online is well-positioned to become the leading communications conduit through
which all health-care transactions are routed.

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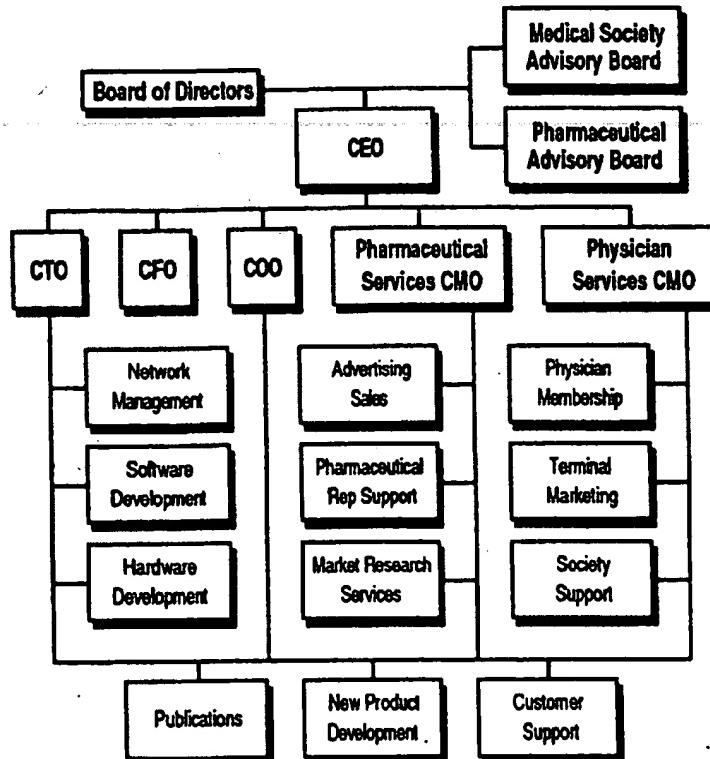
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Our Management Team

Founder, Chairman, & Chief Executive Officer – Christian Mayaud MD

Chris Mayaud brings an intimate understanding of the information needs of practicing physicians, from his background as a practicing board-certified internist, and his personal experience providing for those needs, by founding and managing a compute· ized medical information center at Le: Hill Hospital in New York City during his residency training. During his professional migration from a "pure science" background in physics to the "applied sciences" of engineering and medicine, Chris began directing his attention to interdisciplinary problem solving. The opportunity to make a significant contribution to health-care, through a strategic application of telecommunications and computer sciences, became clear to him during his medical training. The insights derived from observing how physicians use computerized information led to the vision of *Physicians' Online*. The subsequent three years of research into the market forces driving the health-care, pharmaceutical, and information industries lead to our product and market strategy. Chris is responsible for the overall direction, coordination, and implementation of *Physicians' Online*. In addition to day-to-day management responsibilities, he acts as a liaison for strategic allies, including medical societies and pharmaceutical sponsors. He also plays a key role in building the company's public image.

Chief Technology Officer – William Greenberg MD

Bill Greenberg brings his technical expertise in computer engineering, medical informatics, and vertical-market system-software development, as well as additional market insight as a practicing physician. Bill has focused his medical computing expertise on patient care systems. As Director of the Medical/Computer Knowledge Division of Quality Standards in Medicine (QSM), Bill designed and implemented medical expert systems that assess and monitor quality of medical care in hospitals. Prior to QSM, he developed numerous computer systems, including an automated knowledge entry system for the AI Rheum decision-support at the NIH, a computerized voice-synthesizer for communicating with ventilator-dependent patients, a point-of-sale data system, and an air-freight tracking system. Bill is responsible for overall system design and implementation, as well as ongoing product development. He coordinates the third-party development efforts of software developers, hardware manufacturers, and information providers.

Chief Marketing Officer – Terrill Burnett

Terrill Burnett brings an extensive background in developing and implementing marketing strategies. As VP of Strategic Planning for Invec International, Terrill worked closely with Rhone-Poulenc and Fortune 500 companies to orchestrated successful entries into US and French markets. She also brings a background in negotiation and conflict management, and international banking, complemented by an MBA from UCLA. Her insights into the market dynamics of the health-care industry stem from her long-term involvement in DIFCO – a privately-held manufacturer of medical laboratory reagents. Terrill is currently refining and focusing our marketing strategy. She is responsible for positioning *Physicians' Online* in its multiple markets and coordinating the implementation of specific marketing programs.

Chief Operating Officer – Steven Hochberg

Steve Hochberg brings his expertise in business operations, financial and strategic planning, and implementation of growth strategies. As an entrepreneur, this CPA and Harvard MBA has founded, built, and managed, as a chief executive, a $15 million software company, an investment fund, and several national professional non-profit organizations. In addition, through his widely published research and his client work with Sigoloff & Associates, Alex. Brown & Sons, and Bain & Company, Steve has developed a reputation as a business viability and strategy expert. During our company's start-up phase, Steve also serves as our CFO.

* *

Strategy Consultant – Donald Wilson

Don Wilson brings his depth of experience from the information industry and expertise in new business development. His career includes line management, political work, foreign service, corporate law, and management consulting. In 1970 Don entered the information industry when he planned, organized, and served as the first president of Mead Data Central. As founding president of Mead Data Central, he developed *LEXIS* – the leading online information service for the legal profession. Mead Data Central has become the world's largest online full-text information retrieval service with revenues exceeding half a billion dollars per year. Don has been "in at the beginnings" of Prodigy, CBS Publishing, the Sony Trinitron, the Grolier Electronic Encyclopedia, Dun's Voice, PhiNet, Information America, and a number of other enterprises. Don has been active with the Information Industry Association's (IIA) New Business and Industry Research Committees. He has also sponsored the IIA's seminar on "Valuing and Financing Information Companies."

VI - Financial Projections

Phase I - Projected Earnings at Year 5
(Best Case / Worst Case Scenarios)

	Worst	Median	Best
MEDLINE (50%)			
Total MEDLINE Market (Hr/Yr)	3,000,000	4,000,000	5,000,000
% MEDLINE Market Share	20%	50%	80%
Total MEDLINE	600,000	2,000,000	4,000,000
Drug Info (25%)	300,000	1,000,000	2,000,000
QMR (15%)	180,000	600,000	1,200,000
Other (10%)	120,000	400,000	800,000
Total Online Hours/Yr (100%)	1,200,000	4,000,000	8,000,000
Online Revenue $/Hr	$18	$20	$22
Total Online Revenue $/Yr	$21,600,000	$80,000,000	$176,000,000
Membership	50,000	150,000	400,000
% Physician Market	10%	30%	80%
Ave Online Hr/Yr/Member	24	27	20
Membership Fee/Yr	$0	$30	$60
Total Membership Fees	$0	$4,500,000	$24,000,000
Marketing Data Fees	$0	$1,000,000	$5,000,000
Total Annual Revenue	$21,600,000	$85,500,000	$205,000,000
After Tax Margin %	20%	30%	40%
Net Earnings	$4,320,000	$25,650,000	$82,000,000

Phase I · Funds Required & Their Uses

Round 1 · Alliance Building Phase (3 months) ·	$250,000

Obtain Initial Online Advertising Commitments
Obtain Initial On-site Terminal Commitments
Begin Pharmaceutical Advisory Board Recruitment
Begin Medical Society Advisory Board Recruitment
Finalize Core Information Product Contracts
Finalize System Development Contracts
Finalize Terminal Supplier Contracts
Finalize BBS Prototype
Finalize Pharmaceutical Launch Marketing Plan
Finalize System Specifications
Begin Terminal Test Site Recruitment

Round 2 · System Development Phase (3 months)	$750,000

Finalize Pharmaceutical Ongoing Marketing Plan
Finalize Physician Launch Marketing Plan
Finalize Physician Ongoing Marketing Plan
Finalize Customer Service/Tech Support System Plan
Finalize Publicity/Public Relations Plan

Finish Overall System Design & Integration (Sybase)

Online Product Development -- Core Triad
- MEDLINE (ConQuest)
- QMR (Camdat)
- Drug Info (Camdat & USP)

Other key software modules
- BBS (Coconut)
- Ad Wizard (Sybase)

On-site terminal designed & tested
PC software designed & tested for DOS, Win, & Mac OS (Coconut)

Round 3 · System Integration / Testing Phase (3 months)	$750,000

Computer system installed & tested
Test Site Terminals Installed & tested
Launch Staff Recruited & Trained
Customer Support/Tech Support System established
System & Operations optimized
Physician Marketing Launch
Pharmaceutical Marketing Launch
Publicity Launch
Physician recruitment for beta-testing
Finalize On-site Terminal Commitments
Finalize Terminal Test Site Recruitment
Finalize Terminal Financing
Phase II/III Strategy & Implementation Planning begun

Total Funds Required (Prior to National Availability)	$1,750,000
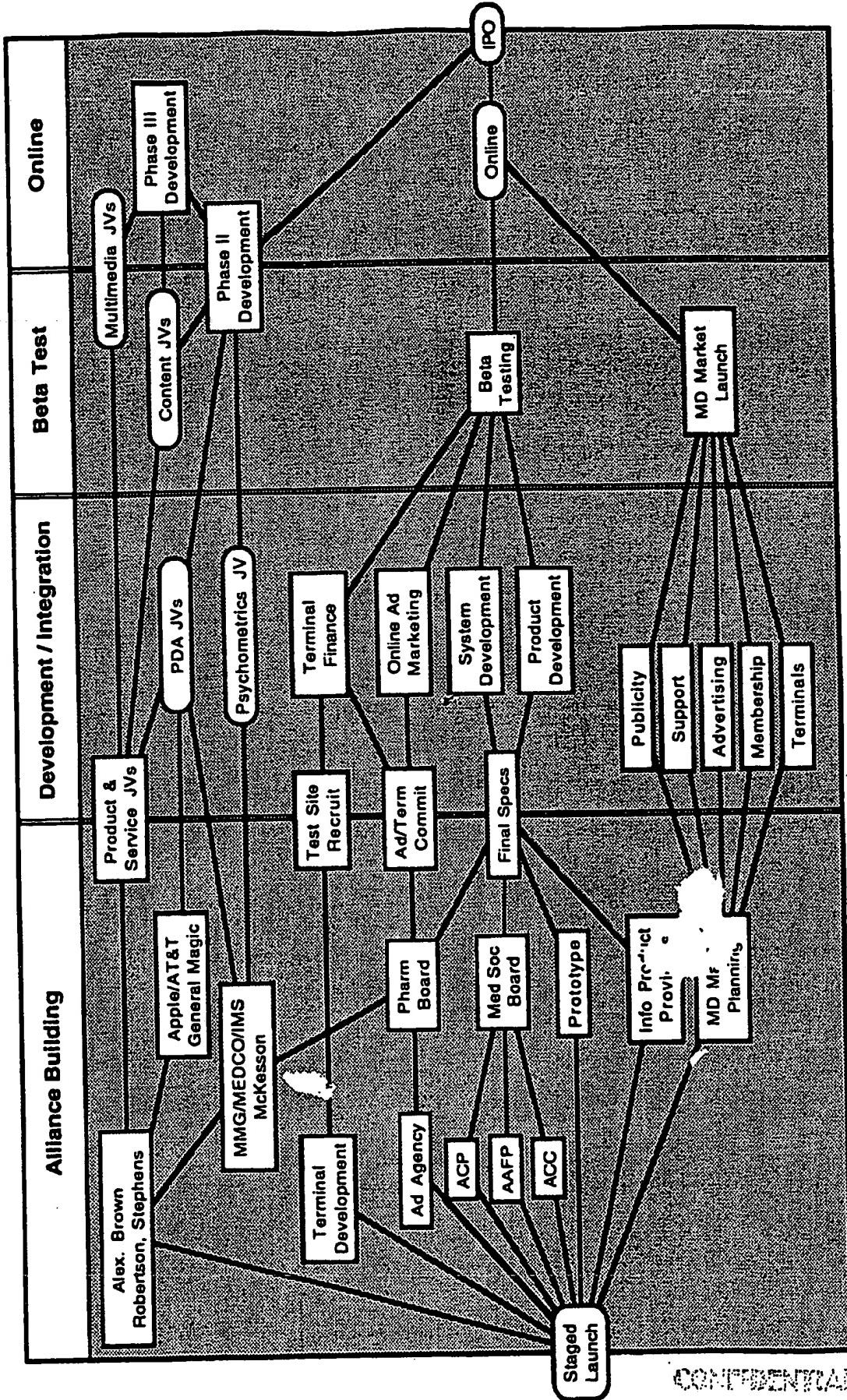
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Pre-Online Budget (continued)

Expenses	Alliance				Development				Integration				Total
	Mth 1	Mth 2	Mth 3	Sub-Tot	Mth 4	Mth 5	Mth 6	Sub-Tot	Mth 7	Mth 8	Mth 9	Sub-Tot	Total
Administrative													$0
Rent						$2,500	$2,500	$5,000	$5,000	$5,000	$5,000	$15,000	$20,000
Telephone	$1,000	$1,000	$1,000	$3,000	$1,000	$1,000	$1,000	$3,000	$1,000	$2,000	$2,000	$5,000	$11,000
Utilities						$500	$500	$1,000	$1,000	$1,000	$1,000	$3,000	$4,000
Supplies	$250	$250	$500	$1,000	$500	$1,000	$1,000	$2,500	$1,000	$3,000	$3,000	$7,000	$10,500
Misc Travel	$3,000	$3,000	$3,000	$9,000	$3,000	$3,000	$3,000	$9,000	$3,000	$3,000	$3,000	$9,000	$27,000
Insurance						$1,000	$1,000	$2,000	$1,000	$1,000	$1,000	$3,000	$5,000
Misc	$500	$500	$500	$1,500	$1,000	$1,000	$1,000	$3,000	$1,000	$1,000	$1,000	$3,000	$7,500
Total Gen Adm	$4,750	$4,750	$5,000	$14,500	$5,500	$10,000	$10,000	$25,500	$13,000	$16,000	$16,000	$45,000	$85,000
Sales & Marketing													$0
Travel	$500	$3,000	$5,000	$8,000	$5,000	$5,000	$5,000	$15,000	$5,000	$5,000	$5,000	$15,000	$20,000
Materials	$500	$500	$500	$1,500	$500	$500	$500	$1,500	$500	$500	$500	$1,500	$4,500
Advertising (P)									$50,000	$50,000	$50,000	$150,000	$150,000
Misc	$500	$500	$500	$1,500	$1,000	$1,000	$1,000	$3,000	$1,000	$1,000	$1,000	$3,000	$7,500
Total S&M	$1,000	$4,000	$6,000	$11,000	$6,500	$6,500	$6,500	$19,500	$56,500	$56,500	$56,500	$169,500	$200,000
Professional Fees													$0
Strategy Consultant	$5,000	$1,000	$1,000	$7,000	$2,000	$2,000	$2,000	$6,000	$2,000	$2,000	$2,000	$6,000	$19,000
Legal		$10,000	$15,000	$25,000	$20,000	$20,000	$20,000	$60,000	$10,000	$10,000	$10,000	$20,000	$115,000
Investment Banking			$25,000	$25,000	$25,000			$25,000				$0	$25,000
Accounting		$1,000	$1,000	$2,000	$1,000	$1,000	$1,000	$3,000	$3,000	$3,000	$3,000	$9,000	$40,000
Advertising		$10,000	$10,000	$20,000	$10,000	$10,000	$10,000	$30,000	$10,000	$10,000	$10,000	$30,000	$30,000
Publicity				$0	$5,000		$5,000	$15,000	$5,000	$5,000	$5,000	$16,000	$20,000
Telemarketing				$0			$5,000	$5,000	$5,000	$5,000	$5,000	$15,000	$20,000
Design				$0					$1,000	$1,000	$1,000	$3,000	$9,000
Total Prof Fees	$5,000	$22,000	$52,000	$79,000	$63,000	$38,000	$43,000	$114,000	$36,000	$36,000	$36,000	$108,000	$331,000
Total Expenses	$33,7	$97,950	$145,500	$277,500	$216,000	$218,200	$219,400	$651,900	$224,500	$265,900	$252,700	$754,100	$1,683,200

Pro Forma Balance Sheet: First 3 Years

Pro Forma Balance Sheet	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	FY1994	FY1995	FY1996
Short-term Assets															
Cash (10)	$1,895,359	$1,763,700	$1,571,550	$1,448,373	$1,503,055	$1,705,911	$2,005,700	$2,589,328	$3,205,722	$3,904,703	$4,680,260	$5,561,201	$5,561,201	$10,313,856	$54,742,387
Accounts receivable (11,12)	$119,096	$446,055	$1,027,110	$1,565,082	$2,312,014	$2,599,356	$3,333,575	$3,663,781	$4,033,356	$4,343,301	$4,626,616	$4,883,301	$4,883,301	$11,123,340	$23,837,012
Inventory	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other Short-term Assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Short-term Assets	$2,114,455	$2,239,755	$2,598,660	$3,103,455	$3,815,069	$4,405,267	$5,439,245	$6,295,107	$7,239,078	$9,248,003	$9,216,868	$10,444,502	$10,444,502	$20,434,206	$78,579,379
Long-term Assets															
Capital Assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Accumulated Depreciation	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Long-term Assets (13)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Assets	$2,114,455	$2,239,755	$2,598,660	$3,103,455	$3,815,069	$4,405,267	$5,439,245	$6,295,107	$7,239,078	$9,248,003	$9,216,868	$10,444,502	$10,444,502	$20,434,206	$78,579,379
Debt & Equity															
Accounts Payable (14)	$210,087	$356,668	$608,092	$885,165	$1,147,724	$1,397,900	$1,581,550	$1,711,361	$1,834,431	$1,953,308	$2,057,916	$2,154,275	$2,154,275	$3,766,335	$8,710,513
Short-term Notes	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other ST Liabilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Subtotal ST Liabilities	$210,087	$356,668	$608,092	$885,165	$1,147,724	$1,397,900	$1,581,550	$1,711,361	$1,834,431	$1,953,308	$2,057,916	$2,154,275	$2,154,275	$3,766,335	$8,710,513
Long-term Liabilities (15)	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000	$2,000,000
Total Liabilities	$2,210,087	$2,356,668	$2,608,092	$2,885,165	$3,147,724	$3,397,900	$3,581,550	$3,711,361	$3,834,431	$3,953,308	$4,057,916	$4,154,275	$4,154,275	$5,766,335	$10,710,513
Paid in Capital	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000	$1,500,000
Retained Earnings	($1,500,000)	($1,595,822)	($1,618,912)	($1,607,402)	($1,241,740)	($832,655)	($202,533)	$347,615	$820,822	$904,773	$2,704,987	$3,758,969	$3,758,969	$4,700,227	$23,168,671
Earnings	($95,822)	($23,091)	$11,510	$365,663	$409,085	$540,122	$640,348	$725,019	$820,922	$280,049	$984,273	$1,031,257	$1,031,257	$19,378,645	$45,299,095
Total Equity	($95,822)	($115,913)	($31,403)	$258,260	$619,069	$1,207,447	$1,647,611	$2,583,825	$3,404,647	$4,284,867	$5,256,069	$6,290,227	$6,290,227	$14,667,871	$50,068,866
Total Debt & Equity	$2,114,455	$2,239,755	$2,598,660	$3,103,455	$3,815,069	$4,405,267	$5,439,245	$6,295,107	$7,239,078	$9,248,003	$9,216,868	$10,444,502	$10,444,502	$20,434,206	$78,579,379
Check Line	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Net Worth	($95,822)	($115,913)	($37,403)	$258,260	$697,345	$1,207,447	$1,647,611	$2,583,825	$3,404,647	$4,284,867	$5,256,069	$6,290,227	$6,290,227	$24,668,871	$60,068,866

Pro Forma Income
(First 3 Years)

Pro Forma Income
(First 12 Months)

Pro Forma Income Statements First 3 Years

Pro-forma Income Statement	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	FY1994	FY1995	FY1996
Revenue															
Cost of Goods Sold															
Cost of Units Sold															
Service/Fulfillment Salaries															
On-site Terminal Lease (10)															
Total Cost of Goods Sold															
Gross Margin															
Gross Margin %															
Operating Expenses:															
Sales & Marketing Expenses															
Sales/Marketing Salaries															
Advertising/Promotion															
Telephone															
Commissions															
Travel															
Other															
Total S & M Expense															
Gen & Adm Expenses															
Administrative Salaries															
Leased Equipment															
Utilities															
Insurance															
Location															
Depreciation															
Payroll Burden															
Telephone															
Total Gen & Adm Expense															
Gen & Adm %															
Other Operating Expenses															
Management Salaries															
Contract/Consultants															
Other															
Total Other Operating Exp															
Sales %															
Total Operating Expenses															
Profit Before Interest & Taxes															
Interest Expense ST															
Interest Income															
Taxes Incurred															
Net Profit															
Net Profit/Sales															

Pro Forma Cash Flow: First 3 Years

Pro Forma Cash Flow	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	FY1994	FY1995	FY1996
Net Profit:	($95,512)	($93,261)	$111,510	$15,413	$400,085	$540,122	$440,248	$175,010	$230,822	$50,041	$184,272	$1,031,257	$9,390,227	$18,376,443	$45,179,693
Plus:															
Depreciation (12)	$210,987	$148,581	$247,424	$270,103	$262,529	$250,078	$183,749	$129,732	$123,150	$118,077	$104,608	$99,360	$2,154,275	$11,811,059	$2,948,178
Δ in Accts Payable(11)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
ST Borrowing (repayment)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Δ Other Liabilities	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
LT Borrowing (repayment)(10)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$1,127,817	$8,444,562	$19,989,704	$48,245,173
Capital Input	$114,463	$125,380	$358,934	$544,768	$971,614	$700,199	$824,008	$865,741	$643,972	$1,008,028	$1,068,880				
Subtotal															
Less:															
Δ in Accts Receivable(12)	$119,004	$...1,050	$581,055	$467,973	$818,932	$587,342	$434,210	$363,206	$306,575	$309,046	$283,315	$256,665	$4,883,201	$6,237,039	$12,818,672
Δ in Inventory	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Δ in Other ST Assets	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Capital Expenditure (13)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Dividends															
Subtotal	$119,004	$326,650	$681,055	$467,973	$818,932	$587,342	$434,210	$363,206	$334,575	$309,045	$283,315	$256,665	$4,883,201	$6,237,039	$12,818,672
Net Cash Flow	($4,421)	($201,669)	($223,120)	($122,206)	$154,669	$702,834	$390,079	$502,134	$407,196	$698,981	$765,646	$970,922	$3,561,261	$13,752,646	$35,429,601

Check

Cash Analysis
(First 12 Months)

Cash Analysis
(First 3 Years)

Personnel: First 3 Years

4. Personnel Plan	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	FY1994	FY1995	FY1996
Production/Support															
Average Salary	$4,000	$4,000	$4,000	$4,500	$4,900	$4,900	$4,900	$4,900	$4,900	$4,900	$4,900	$4,900	$59,900	$65,000	$72,000
People	6	8	8	8	8	10	10	10	10	11	11	11	11	17	26
Payroll	$39,500	$39,200	$39,200	$39,200	$39,200	$49,000	$49,000	$49,000	$49,000	$53,900	$53,900	$53,900	$553,700	$1,105,000	$1,872,000
Sales & Marketing															
Average Salary	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$5,000	$50,000	$68,000	$73,000
People	2	2	2	3	3	3	3	3	4	4	4	4	4	6	9
Payroll	$10,000	$10,000	$10,000	$15,000	$15,000	$15,000	$15,000	$15,000	$20,000	$20,000	$20,000	$20,000	$195,000	$398,000	$657,000
Administration															
Average Salary	$3,100	$3,100	$3,100	$3,100	$3,100	$3,100	$3,100	$3,100	$3,100	$3,100	$3,100	$3,100	$37,200	$41,000	$45,000
People	5	5	5	5	5	5	6	6	6	7	7	7	7	11	17
Payroll	$15,500	$15,500	$15,500	$15,500	$15,500	$15,500	$18,600	$18,600	$18,600	$21,700	$21,700	$21,700	$213,000	$451,000	$765,000
Management															
Average Salary	$8,300	$8,300	$8,300	$8,300	$8,300	$8,300	$8,300	$8,300	$8,300	$8,300	$8,300	$8,300	$99,600	$129,000	$168,000
People	5	5	5	5	5	5	6	6	5	6	6	6	6	7	8
Payroll	$41,500	$41,500	$41,500	$41,500	$41,500	$41,500	$41,500	$41,500	$41,500	$49,800	$49,800	$49,800	$522,900	$903,000	$1,344,000
Total Headcount	20	20	20	21	21	23	24	24	25	28	28	28	28	41	60
Total Salary	$106,200	$106,200	$106,200	$111,200	$111,200	$121,000	$124,100	$124,100	$128,100	$145,400	$145,400	$145,400	$1,475,500	$2,655,000	$4,638,000
Payroll Burden	$26,550	$26,550	$26,550	$27,800	$27,800	$30,250	$31,025	$31,025	$32,275	$36,350	$36,350	$36,350	$368,875	$713,750	$1,159,500
Total Payroll Expenditure	$132,750	$132,750	$132,750	$139,000	$139,000	$151,250	$155,125	$155,125	$161,375	$181,750	$181,750	$181,750	$1,844,373	$3,565,750	$3,797,500

Note: "Personnel Burden %" Rate in Assumptions Area

Personnel Plan:
Headcount Year 1

Personnel Plan:
Headcount by Year at Year End

Revenue Forecast First 3 Years

Revenue	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	FY1994	FY1995	FY1996
Units Sold															
Total Membership	1,000	4,000	11,000	21,000	33,000	46,000	58,000	68,000	79,000	89,000	96,000	103,000	103,000	154,500	231,750
New Members	1,000	3,000	7,000	10,000	12,000	13,000	12,000	11,000	10,000	9,000	8,000	7,000	103,000	51,500	77,250
Total Terminals	250	1,050	2,375	3,725	4,625	5,325	5,575	5,825	6,075	6,325	6,575	6,825	7,100	10,250	14,975
Sold Terminals	25	50	75	100	150	200	250	250	250	250	250	250	2,100	3,150	4,725
Sponsored Terminals (14,410)	500	750	1,250	1,250	750	500							5,000	0	0
Connect Hours (15)	3,500	14,500	34,750	58,250	79,250	99,250	112,750	127,250	139,750	151,250	161,750	171,250	1,154,500	2,103,550	4,187,745
Other (16)	250	1,050	2,375	3,725	4,625	5,325	5,575	5,825	6,075	6,325	6,575	6,825	54,550	81,825	122,738
Total Units Sold	6,525	24,400	56,825	68,050	134,400	169,600	195,150	218,150	241,150	261,150	279,150	295,150	1,429,250	2,494,775	4,619,183
Unit Prices															
Total Membership (17)	$0.00	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$50
New Members	$0.00	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Terminals	$0.00	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sold Terminals (18)	$600.00	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$540	$488
Sponsored Terminals (19)	$0.00	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Connect Hours (19)	$18.00	$18	$18	$18	$18	$18	$18	$18	$18	$18	$18	$18	$18	$20	$22
Other	$10.00	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$10	$15	$23
Total Revenue															
Total Membership	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$4,635,000	$13,905,000
New Members	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Terminals	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sold Terminals	$15,000	$30,000	$45,000	$60,000	$90,000	$120,000	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	$1,260,000	$1,701,000	$2,296,350
Sponsored Terminals	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Connect Hours	$63,000	$261,000	$625,500	$1,048,500	$1,426,500	$1,785,500	$2,047,500	$2,290,500	$2,515,500	$2,722,500	$2,911,500	$3,082,500	$20,781,000	$43,871,000	$91,660,300
Other	$2,500	$10,500	$23,750	$37,250	$48,250	$53,250	$56,750	$58,250	$60,750	$63,250	$65,750	$68,250	$545,500	$1,227,375	$2,822,971
Total Revenue	$80,500	$301,500	$694,250	$1,145,750	$1,557,750	$1,959,750	$2,253,250	$2,498,750	$2,726,250	$2,935,750	$3,127,250	$3,300,750	$22,586,500	$51,434,375	$110,714,716
Unit costs															
Total Membership	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
New Members	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Terminals	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$600	$540	$488
Sold Terminals (19)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sponsored Terminals (19)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Connect Hours (20)	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Cost of Goods Sold															
Total Membership	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
New Members	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Terminals	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Sold Terminals	$15,000	$30,000	$45,000	$60,000	$90,000	$120,000	$150,000	$150,000	$150,000	$150,000	$150,000	$150,000	$1,260,000	$1,701,000	$2,296,350
Sponsored Terminals	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Connect Hours	$21,000	$7,000	$208,500	$348,500	$475,500	$595,500	$682,500	$763,500	$838,500	$907,500	$970,500	$1,027,500	$8,027,000	$13,161,300	$25,006,470
Other	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Total Cost of Goods Sold	$36,000	$117,000	$253,500	$409,500	$565,500	$715,500	$832,500	$913,500	$988,500	$1,057,500	$1,120,500	$1,177,500	$9,187,000	$14,862,300	$27,302,820

Membership
(First 3 Years)

Membership
(First 12 Months)

On-Site Terminals
(First 3 Years)

On-Site Terminals
(First 12 Months)

Online Hours
(First 3 Years)

Online Hours
(First 12 Months)

Break-even Analysis

Break-even Analysis: Monthly Online Hours
(First Year)

Online Hours / Month

Profits

Break-even Analysis: Monthly Ad Sales
(First Year)

Online Ad Sales / Month

Profits

Break-even Analysis

Break-even Analysis:	FY1994	FY1995	FY1996
Assumptions:			
Ad Revenue/hr	$18	$20	$22
Average Cost/hr	$6	$6	$4
Monthly Fixed Cost	$278,320	$443,000	$477,030
Avge Hours/Yr/Member	10	10	10
Break-even:			
Monthly Hours	22,377	31,708	42,371
Monthly Ad Sales	$418,982	$634,158	$932,166
Annual Hours	279,228	380,494	508,454
Annual Ad Sales	$3,351,854	$5,328,910	$9,135,284
Membership	27,923	38,049	50,845
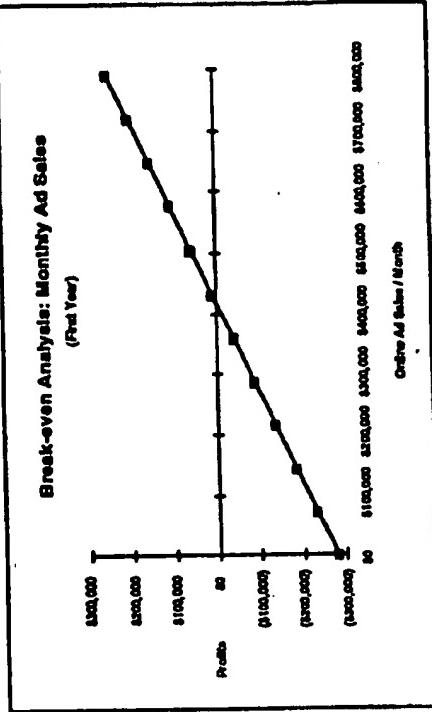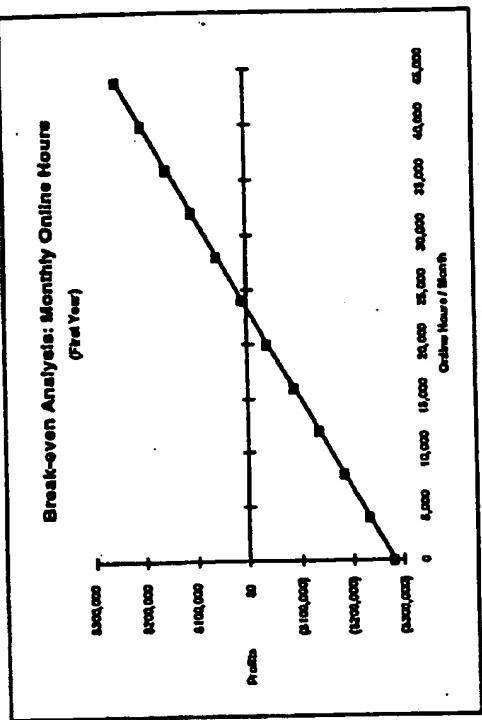
Assumptions Used in the Financial Analysis

These financial projections consider only the effect of the initial core online information product triad (MEDLINE, QMR, and Drug Info). No additional products or services are assumed. The value of any proprietary pharmaceutical marketing data generated is also not included.

Current market trends point to a continued fall in telecommunications and electronic processing costs (assume 10%/yr). Our average ad revenue per hour will tend to rise as pharmaceutical advertisers become increasing sophisticated and the demand for more precise targeting increases (assume 10%/yr). These trends will tend to widen our gross margin over time. Otherwise, no adjustments have been made for inflation. All numbers are assumed valued in today's dollars.

	FY1994	FY1995	FY1996
Collection Days(23)	45.00	45	45
Payment days(23)	45.00	45	45
Inventory turns	100.00	100	100

	FY1994	FY1995	FY1996
Payment days(23)	45	45	45
Short Term Interest Rate	8.00%	8.00%	8.00%
Interest Income Rate	5.00%	5.00%	5.00%
Commissions Percent	1.00%	1.00%	1.00%
Tax Rate Percent	40.00%	40.00%	40.00%
Sales on Credit %	100.00%	100.00%	100.00%
Accts Payable % Expenses	100.00%	100.00%	100.00%
Personnel Burden %	25.00%	25.00%	25.00%

Delivery Cost Breakdown per hour for Online Information

Connect Time Charges	$2.00
Royalties/Licensing Fees	4.00
Total Delivery Cost per hr	$6.00

Hardware Cost for Online Information Delivery

Hardware is the most difficult cost to estimate *a priori* because of its relationship to total system demand is multi factorial and includes multiple specific technological and software implementation issues. In terms of initial system capacity, we use typical online system usage pattern assumptions as they apply to the medical profession:

- 80% of total 24 hour online demand occurs during 10 prime-time hours (8 AM to 6 PM) (hourly variation in system demand).
- 90% of total weekly online demand occurs Monday thru Friday (5 days per week or 250 days per year) (day of week variation or week-end effect on demand).
- Each incoming line can handle about 2500 peak connect hours per year.
- Therefore, 40 lines are needed to handle 100,000 connect hours per year.

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- To ensure the system rarely gets overloaded (i.e., that we can meet variations in peak demand) we need an extra 25% safety cushion of additional lines. (Since we are free, we can't use traditional "load-leveling" techniques such as offering discount rates for evening use.)
- Therefore, we'll need at least 50 lines per 100,000 connect hours per year or 1 line per 2,000 connect hours per year.
- Our initial hardware configuration will handle 200 lines (or about 400,000 hours/yr) for $300,000 or $1500 per line.
- Assuming $18/hr of advertising revenue, each line is capable of generating $36,000 per year for a hardware investment of only $1500/line. 200 lines will handle up to $7,200,000/yr of online ad revenue.

Assuming a useful hardware life of 3 years, the consumable hardware is expense of $500 per year per line or about $.25 per online hour (assuming average 2000 hours per year per line of use). Since equipment will be leased, main computer hardware will be expensed and not depreciated in these calculations. Assuming an additional $.25 per hour contingency and leasing costs the total hardware expense is estimated at $.50 per hour. Note that the timing of actual hardware additions will be made to the system will be based on performance degradation as total demand increases on the system. Actual incremental purchases will be made but leasing will have a leveling effect on this expense so that the $.50 per hour hardware assumption in these spreadsheets should correlate well to actual expenditures.

Hardware Cost per line per year	$500 /line/yr
Average Annual Billable Connect hrs per line	2000 hr /yr
Hardware Cost per line per hr	$.25 /hr
Average Online Advertising Rate per hr	$18.00 /hr
Average Annual Revenue per line	$36,000 /yr/line
"Return on Investment" (ROI) per line	7,200 %

Initial Hardware Configuration Estimates

Assuming the overhead will average about $250,000 per month when we go online, we will need about 300,000 online hours per year to break-even. Since we need one line per 2,000 hours, we need 150 lines to break-even. An initial hardware configuration of 200 lines will cost about $300,000 or about $1500 per line and give us a capacity to handle about 400,000 hours per year or $7.2 million in advertising revenue per year.

On-Site Terminal Cost Analysis

Terminal Cost	$1000
Average Connect hr per wk	2 hr/wk
Average Connect hrs per year	100 hrs/yr
Average Online Advertising Rate per hr	$18.00 /hr
Average Annual Revenue per terminal	$1800 /yr

Notes

1 Estimated cost of overall system design and implementation by Sybase (formerly SQL Solutions).

2 Estimated cost of licensing and customization of the graphic BBS system and dedicated communications software development for UNIX, DOS, Windows, and Macintosh operating systems.

3 Estimated cost of design and implementation of the MEDLINE search module by ConQuest Software Technologies (formerly Synchronetics). Includes $8,000 one time NLM storage media charge in Month 2.

4 Estimated cost of design and implementation of the QMR Diagnostic Decision Support module and the USP Drug Info module by Camdat. This is really an advance against future online royalties, not a true expense.

5 This is a "catch all" category for "off-the-shelf" software and related expenses for the internal company computer network (LAN, word processing, database, desktop publishing, graphics, accounting, billing, customer service, etc.).

6 The initial main computer will be leased (or purchased over 60 months) for $6000/month.

7 Installation includes both site preparation and network connection costs.

8 This is another "catch all" category for the hardware and related expenses for the company computer network (including workstations, file servers, notebook computers, modems, LANs, laser printers, monitors, etc.)

9 This category includes costs related to direct mailings, magazine advertising, and distribution of free dedicated communications software.

10 While the pharmaceutical sponsors will provide the purchase funding for the initial 5,000 terminals ("sponsor terminals"), the company intends to sell and leaseback some or all of these terminals to an equipment finance company to generate an additional $2 million working capital. This amount is reflected as a long term liability.

11 The formula here calculates the previous year's accounts receivable as a ratio to sales on credit, then applies that same ratio to this year's sales on credit, and then applies the percentage difference between collection days in the previous year and the collection days this year. (Got it?) (see Note: 23)

12 Even though, as an advertising medium, we have the advantage of a prepaid accounts receivable, no cash flow advantage is assumed here. Accounts receivable and accounts payable are assumed to be "in phase" and have a neutral effect on cash flow.

13 Since the only major capital expense is the main computer hardware, which is leased, we have simplified calculations by omitting any depreciation. N.B., we co... i.'ering our on-site terminals are an expense and not a capital outlay which can be depreciated.

14 5000 pharmaceutical company sponsored terminals are to be distributed to targeted clinical sites during the first six months of operations. These are the terminals that were committed to by our pharmaceutical advisory board companies prior to launch. This includes the 100 terminals distributed during the alpha-testing phase. This 5,000 terminal assumption could change dramatically depending on utilization and new membership rates we observe during the alpha test phase. If on-site utilization rates are high enough, we may find it strategically advantageous to leverage our market entry further by rapidly saturating the US hospital market with our terminals by financing them ourselves rather than depending on pharmaceutical company distribution and site purchases.

15 Total online time = members x average use per member + terminals x average use per terminal.

Strictly speaking, this calculation is incorrect because "average member use" should include time spent on on-site terminals as well as other personal computers, terminals, etc. However, the convenience and immediate availability of on-site terminals in the hospital setting will clearly have some effect on increasing total online demand (and membership). By separating the terminal effect from the membership effect, we are quantifying their effect on total system demand. So, strictly speaking, the "average member use" here means the average member use on machines other than dedicated on-site terminals.

The average online time/member = 12 hours/year
The average online time/terminal = 120 hours/year

These utilization rates probably underestimate early usage by neglecting any "novelty" effect and the relative sophistication of the initial users of our system. Average usage per member may trend downwards over the near term from a misleadingly high rate at start-up as the "novelty" effect wears off and, in the long run, as more casual and less sophisticated users begin to predominate membership.

However, no assumptions are made about the growth of individual use for the initial information "triad" (MEDLINE, QMR, and Drug Info) or the effect of addition of new online information products and services. These stimulatory effects on demand, combined with the accelerated pace of medical computerization and computer-sophistication of physicians, should tend to cancel the demand eroding trends noted above. Hence, the average demand is assumed flat for the first three years.

The annualized online time calculations assume straight-line growth rates in membership and terminals in order to simplify online time estimates due to new members and new terminals. [In other words: the contribution to online time/year of new terminals and new membership = 1/2 (new members for that year x average use) + 1/2 (new terminals for that year x average use)]

16 Additional revenue of $10/month/on-site terminal is assumed for special graphical "start-up" screen advertising.

17 There is no membership fee for the first fiscal year. The issue of whether or not to introduce membership fees will have to weigh the relative value of the annuity effect of membership fees to the lost advertising revenue from the loss of marginal users likely to discontinue their membership with the introduction of an annual fee. Clearly, the competitive environment will also weigh in this decision. Optimum timing of the introduction of membership fees would be as the growth rate in membership begins to level out.

18 Any terminals sold (not sponsored) are priced at cost so no net contribution to income or expenses is assumed. Assumed is a continuation of current industry trend towards falling computer hardware prices. 10% per year per on-site terminal is assumed.

19 The basic online advertising rate is priced at $18/hr (7.5 cents/15 sec "spot"). The price of additional targeting features, E-mail, linkages, etc. are not included.

20 $6/hr online cost includes a third-party information licensing fee of $4/hr and $2/hr telecommunications charge for public data network access. As of January 1, 1993, the NLM no longer charges a usage fee for MEDLINE or any other NLM database. Since the bulk of our system use is for MEDLINE, $6/hr conservatively overestimates variable costs. This assumption also overestimates the cost of other online activities which do not require third-party licensing fees (such as forums, system & menu time, electronic mail, drug detailing databases, etc.).

VII - The Appendix

On-line Membership Sign-up Procedure

Connect → Enter Social Security # → Member?

Member? → Enter Personal Password → Full Member Access

Member? → Membership Questionaire → User Assigns Password → Full Member Access

"800" Membership Sign-up Procedure

Physician Calls 800 #

Initial Screening Interview
- Individual Membership
- Institutional Membership
- On-Site Terminal Request
- Other

Individual Membership Request

On-Site Terminal Request

Qualified?
(physician / resident / student)

Basic Information
(name / address / phone / etc.)

Site Information
(Hospital / Library / Clinic / ER)

Necessary Equipment?
(software / modem / computer)

Special Offers
Software
Modems
Terminals
Computers
Printers
Supplies

On-Site Administrator Info
(Register Responsible Party)

Area Code / Phone Number of User's Terminal / PC?

Assign Local Network Access Phone #

Process Request
(Free Terminal Or Purchase)

Review Log-On Procedure & Communications Parameters with user

Send Follow-up Information Membership Materials, Dedicated Software, Etc.

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Online Advertising Features

Features	Benefits
NO RISK Advertising "Pay-per-View" Advertising "No View...No Pay"	Unlike other advertising media, *Physicians' Online* only charges advertisers for ads actually viewed! If no one views your ad...you pay nothing. True "Pay-per-View" advertising. So you risk nothing by advertising on *Physicians' Online*. You receive a full accounting of all advertising activity and pay only for what was actually seen by your target audience. This makes *Physicians' Online* the most cost-effective and fully-accountable marketing medium to target physicians.
Precise Physician Targeting	Each member fills out a complete online demographic questionnaire when he signs on for the first time. Whenever he signs on to the system, he is identified by his membership number (social security number) and password. So the system knows at all times, who is calling and demographically important information about each individual member. For example, if a company wants to market a product just to cardiologists who practice angioplasty in St. Louis, it can selectively "narrowcast" the message to just these individuals.
Precise Message Targeting Messages Tailored to Each Segment	A product message can also be selectively varied by target segment. If a product is used by different specialties for different reasons, the product message can vary depending on who is viewing the ad. In other words, product features of interest to infectious disease specialists can be shown to them while different features can be shown to gastroenterologists.
Cost-Effective	At 7.5¢ per 15 second ad, you get 15 messages guaranteed to be viewed, for the same price as a single letter that is usually thrown out unopened by the same physician. E-Mail messages, at 50¢ each, are less than half the price of a typical postal mailing...and E-Mail is not thrown-out unviewed! Drug detailing databases, at $18 per hour, are a full order of magnitude less than an average "detailing" sales call which currently costs over $200.
Receptive Audience -- Suggestible State of Mind	*Physicians' Online* members go online for computerized clinical information. 90% of physician online time is devoted to using clinical information databases. 30% of that

time is spent on drug information databases. 65% of that
time is spent on MEDLINE. 60% of MEDLINE activity
involves patient care problems and 40% involves therapy. In
other words, physicians are looking for drug or therapy
information over 60% of their online time.

So you have a influential physician, staring at a computer
screen, actively seeking information about therapy...Not a
bad time to suggest a new product or remind him about an
old product!

And, as "early adopters", *Physicians' Online* members are,
by nature, more receptive to new products and ideas.

Associative Conditioning Tool

Create Powerful "Prescribing
Preference" Reflexes in the Minds
of Targeted Physicians

Physicians can be conditioned to form mental associative
links between a product and a clinical situation. These can
be created using online messages which couple a product
name with a brief yet descriptive "point line." Using 15
second ads, messages flash into the physician's mind 4 times
per minute or 80 times during an average 20 minute
MEDLINE search. Although the physicians may not be
primarily concentrating on the advertising, the ad changes
are always noticed, if only briefly. Through frequent online
reinforcements, associative links can be built into the minds
of targeted physicians. So, whenever a physician
encounters that clinical situation, the associated product
comes to mind first.

The essence of effective pharmaceutical marketing is
Associative Conditioning -- To be the first product that pops
to mind when confronted with a therapeutic decision. What
could more powerfully influence physician prescribing
behavior than being the first drug to pop to mind? The
ultimate "point-of-sale" influence is carried in the mind of
the potential customer.

Professional Goodwill

Since *Physicians' Online* is so newsworthy, we anticipate
extensive coverage by the medical press. This publicity
along with medical society support and early co-marketing
efforts, brings high visibility to *Physicians' Online* and its
early pharmaceutical supporters.

By being identified as supporters of a service which brings
physicians so much for so little, participating
pharmaceutical companies enjoy tremendous professional
goodwill.

Market Leverage:

Member characteristics
 • early adopters
 • influential
 • receptive
 • high prescribers
Physicians' Online members
Extend Marketing Reach

Physicians who regularly use MEDLINE literature search
services are "Medical Opinion Leaders" and high
prescribers. Their opinions are sought out by their peers
since they are assumed to be the most knowledgeable and
current with the literature.

Physicians who use computers are "early adopters" of new
technologies and products and therefore the trendsetters of
their profession. As professional trendsetters, *Physicians'
Online* members extend the reach of any marketing

effort by influencing the rest of the profession. By their
nature they are also more receptive to new products and
ideas.

By marketing to *Physicians' Online* members,
pharmaceutical companies can leverage their marketing
dollars by reaching the most influential members of each
target segment. So capturing these influential physicians
leverages marketing efforts beyond their numbers to the
rest of the profession.

Ad-Linked Features –

Electronic –
  • Drug Detailing
  • Fulfillment
  • Customer Support

Online advertising can be targeted by any demographic
characteristic down to the specific physician. Messages can
be targeted through "static demographic links," dynamic
"context-sensitive links," and "prescribing-practices links."

In addition to the automatic linkage to FDA drug disclosure
data, pharmaceutical companies can link their
advertisements with a number of other features.

Online ads can be linked to –
        – relevant MEDLINE abstracts
        – full text database of supporting literature
        – other online full-text databases
        – drug detailing databases
        – other drug information databases
        – pharmaceutical company forums
        – real-time ad response monitoring
        – online surveys
        – online customer service support
        – E-mail to contact the company directly
        – Fulfillment Functions
                – drug sample requests
                – detail man follow-up requests
                – further drug information

Ads can be linked to specific MEDLINE abstracts so that an
specific ad is shown whenever a specific abstract is
retrieved. In addition to static links, dynamics links can be
created that link ads to specific search concepts. Whenever
a specific concept is invoke by a physician, a specific ad can
be displayed (context-sensitive links). **Precision targeting
transforms online advertising into useful information because
ads are now relevant to the viewing physician.**

Electronic Direct Marketing

MEMBER/ALERT Services
  • E-Mail
  • FAX/NET
  • Regular Mail

The full range of MEMBER/ALERT services offered by
Physicians' Online is available for use by pharmaceutical
companies. Electronic and direct mail services include E-
Mail, FAX/ALERTS, MEMBER/ALERT Postcards, and
special direct mail services. Through any of these means,
messages can be sent to any demographically definable
physician segment.

Direct Physician Communication

In addition to targeting advertising and other electronic
messages, full E-Mail and "live" conferencing capabilities
allow companies to communicate directly with individual
physicians.

Company Forums

Pharmaceutical company forums allow companies to focus and coordinate their online activities through the use and maintenance of company-specific detailing databases, E-mail services, customer support, fulfillment services, special announcements, bulletin boards, etc.

Single-Sponsor Services

Companies may also exclusively sponsor specific online events such live conferences, special interest information services, etc.

Pharmaceutical Advisory Board

In addition to a responsive customer service and sales support team, pharmaceutical advertisers have an opportunity to directly influence the direction of *Physicians' Online* through membership on the Pharmaceutical Advisory Board.

Company Sales Force Support

Sales Reps Online

Advertising Specialties
  • Membership Packets
  • Software
  • On-Site Terminals

With industry-wide estimates of over $200 per sales call and limited opportunities to reach busy physicians, any method that cost-effectively increases total physician contact time is valuable to the pharmaceutical industry.

Pharmaceutical sales reps can have personal online memberships to *Physicians' Online* -- giving them full access to online services including E-Mail, sales call follow-up, advertising placement, etc.

Physicians traditionally receive small gifts from "drug reps" when they make sales calls. Detail men are always looking for low-cost items of value to physicians that convey an advertising message. Free membership packets, software, and dedicated terminals make perfect gifts that pharmaceutical representatives can distribute to physicians and hospital sites in their market territories.

Terminals, membership packets, and software can be further customized with the name of the company, pharmaceutical representative, or any other special advertising or message.

Start-Up Screens on the terminals can be customized to show any message at start-up such as the name of the company donating the terminal. The start-up screen can be used to directing physician to use the online company forum to contact drug reps, get information, order samples, etc.

By encouraging the use of *Physicians' Online*, pharmaceutical reps extend their total physician contact time through the use of electronic mail facilities and other services directed to their specific physician-clients, and generate goodwill in their established and potential customer-base.

Real-time Market Intelligence   *Physicians' Online* Psychometric Data Sources

                                   -- MEDLINE Database itself
                                   -- MEDLINE Usage Data
                                   -- Concept Frequency Data
                                   -- Advertising Response Data
                                   --Specific Survey Data

Powerful new market research tools can be developed from these new psychometric and market data sources. Our continuous real-time market intelligence provides powerful measures of changing market trends.

Online Test Marketing

Monitoring Online Behavior to
Test and Adjust Market Strategies

Any online behavior, such as utilizing options for more drug information, can be tied to specific message displays. The response rate to different messages can be used to identify and differentiate unique concerns of different market segments. Other promotions and market strategies can be fine tuned using response rate data. For example, does a message which emphasizes an new antibiotic's coverage of gram negative bacteria interest an infectious disease physician more than its low incidence of renal toxicity?

Complete online activity data allows advertisers to test the efficacy of different advertising approaches by monitoring the online behavior of targeted physicians.

MEDLINE Trends

Monitor future medical trends

Using MEDLINE as a starting point, powerful new indices can be constructed and used to generate both periodic and customized reports that monitor changing market trends. For example:

<div align="center">

CONCEPT FREQUENCY INDEX

</div>

Concept indexes coupled with citation frequency will generate data concerning overall changing trends in the medical literature over time. Shifting concept frequency trends in the medical literature reflect changing future trends in clinical practice. This information identifies early market trends, anticipates changing demand, and recognizes potentially significant new areas of research, as well as new applications of existing drugs. These concept indices will routinely screen the most forward-looking terminology -- for use in advertising and promotions.

<div align="center">

AUTHOR/ CITATION FREQUENCY INDEX

</div>

Authors of journal articles will be indexed by publications, field of research, etc. This database will generate data on the most influential researchers by various criteria such as area of research, numbers of publications, number of times research is cited by others, etc. By identifying the most influential researchers, research support moneys can be allocated to maximize leverage of research and marketing efforts.

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Online Search Behavior

Physician Psychometric Data

By tracking what questions physicians are asking, *Physicians' Online* has a real-time proprietary database of the clinical concerns of physicians which can be analyzed by any demographically definable physician characteristic.

This database enables the pharmaceutical industry to track the changing clinical concerns of their target markets and adjust their marketing strategies accordingly.

Online search behavior data provides "focus group" type data, but at a greatly reduced cost and higher significance because it monitors what physicians are actually doing...not what they say they are doing.

Physician psychometric data from *Physicians' Online* allows pharmaceutical companies to design effective marketing strategies by developing and marketing products that met the changing concerns and need of physicians.

By coupling this data with prescribing practices data, the pharmaceutical industry now has a complete and potent marketing methodology available to them.

Special Direct Online Services

For pharmaceutical companies who want to expand their direct day-to-day control over this new medium, a customized system will allow them online access to monitor advertising activity, place new ads, maintain company forums, process electronic mail, process online fulfillment requests, etc.

Full sales force computer network out-sourcing services are also available.

Dedicated Account Representatives and Customer Service Staff

A dedicated sales staff and customer support team aids clients in tailoring their online marketing activities to meet their specific marketing objectives.

Account Information

Each advertiser gets an account statement that gives a complete accounting of ads viewed. This report can be customized to yield useful market information.

Online Surveys

A traditional survey approach can be taken as well. These real-time surveys can be conducted either directly or indirectly. These surveys can be designed quickly and the target audience selected by any criteria with the results available within a few days. The online market survey becomes a simple yet highly responsive management tool.

Customized Account Information

Special Customized Ad Activity Reports will yield useful market information. For example, "Who actually viewed that ad" can be summarized by any targeted demographic characteristic.

EXHIBIT G

Physicians' Online

TM

Physicians' Prescribing Network

DRAFT 1.1

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Steven Hochberg
President & Chief Operating Officer

Christian Mayaud, MD
Chairman & Chief Executive Officer
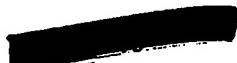
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Physicians' Prescribing Network

Physicians' Prescribing Network (PPN) is an online interactive prescription ordering system linking physicians with the pharmacist and mail order suppliers via an industry supported EDI network to provide patients and plan sponsors with an ability to maximize out-patient prescription cost-containment benefits. PPN is designed to complement existing distribution and claims processing networks by linking them directly to the physician.

The convergence of escalating health care costs and the advance of information technology has paved the way for the formation of PPN. While there are a few companies that currently provide pharmaceutical benefit programs for plan sponsors, none have identified a cost effective means of linking the out-patient physician with their well-developed cost-containment and utilization information systems. PPN has developed a cost-effective means to create the required link to the physician. ·

By creating an industry-wide network, PPN will link physicians, on a wireless basis, directly into all pharmaceutical benefits programs. This linkage will create the tools to empower the physician to increase the quality and lower the cost of prescription drugs in the $40 billion out-patient prescription drug market. These tools include an online formulary, online prospective drug utilization review, electronic transmission of prescriptions to pharmacists, and online access to other information and services.

PPN will provide physicians with the necessary hardware, while the pharmaceutical benefits programs will pay PPN a transaction fee for each prescription. While certain pharmaceutical drug programs may consider creating their own proprietary network, PPN does not believe that a physician will use multiple systems and multiple input devices with multiple interfaces. Instead, successful implementation will require a single universal method to provide drug benefit program information to physicians during the normal prescription writing process. This industry-wide approach is designed to help physicians accept this new technology into their mobile work environment and to avoid the failures that other proprietary network efforts have experienced.

PPN is being organized by Physicians' Online, Inc. (POL), a personalized online medical information and communications service dedicated to empowering physicians with the tools essential to advance the quality and control the cost of health care through informed decision-making. Physicians' Online projects at least 20,000 physician members will be using its online reference, diagnosis, and treatment services by the beginning of 1994. Physicians' Prescribing Network will begin operations in 1994 with a potential membership of over 450.000 physicians. (see Appendix)

PPN is currently in discussion with every major pharmaceutical benefits company and several large physician groups regarding this effort. In addition, PPN is commissioning a health policy consulting group in Washington to study the impact of this effort.

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KEY FEATURES OF PHYSICIANS' PRESCRIBING NETWORK

1. PPN is designed by physicians for physician use. Member physicians can utilize the Network regardless of which plan sponsor or patient is involved.

2. PPN is "open" to all plan sponsors, physicians, retail pharmacists, and mail-order suppliers. However, since physicians will not use a system that does not include all plan sponsors, industry-wide participation is required.

3. *Smart Scripts* enables physicians to maximize patient and plan sponsor cost containment benefits by providing the relevant information during the time of prescription writing.

4. Formularies are continuously updated.

5. PPN lowers transaction costs by eliminating paperwork, waiting time, and avoiding miscommunication between pharmacists and physicians.

6. PPN security eliminates unauthorized prescriptions.

7. PPN provides prescription drug benefits providers, retail pharmacists and mail order suppliers with an ability to offer new products/services.

8. PPN utilizes wireless digital radio technology to assist mobile physicians.

9. PPN is hardware independent allowing for maximum access and changing technologies.

10. The initial hardware expense necessary to establish PPN will be minimized by spreading it across a broad industry alliance.

11. PPN is designed to integrate with claims processing information requirements.

12. PPN is designed to access patient record information.

MANAGED CARE OF PRESCRIPTION DRUG BENEFITS

With the public's concern about "runaway and increasing" costs of health care, numerous efforts are underway to lower such costs through programs focusing on practice utilization areas rather than the traditional price controls. In fact, programs that have focused primarily on price controls have been relatively unsuccessful so far because utilization has increased in such programs thus eliminating any benefits from price reductions. However, utilization management, particularly for patient management, requires physician participation and superior information management.

In the area of pharmaceutical drug benefit management, employers can separate out this benefit from the rest of its health care plan which currently account for about 7% of employers' total health care costs. By "carving out" and applying managed care techniques to the pharmaceutical benefit, the employer can better track costs, control utilization, decrease risk, and often lower the premium for the remaining health care benefits which are generally administered by traditional indemnity or managed care companies. Currently, approximately 20% of employers currently carve out pharmaceutical benefits.

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A major business opportunity for managed care companies has emerged through the intense need for management of rapidly growing pharmacy benefit costs", says Alex. Brown & Sons. "In fact, the prescription drug segment of health care costs is one of the fastest-growing components of the health care equation that can equal one-third of total post-retiree health care benefits." While there are currently only a few national companies that compete in this segment, a significant investment in information technology is required to provide the following basic services:

Formulary: A formulary guides physician prescribing by listing drugs preferred for treating specific illnesses. Since there are several competing products in most therapeutic prescription drug classes, health care buyers, organizers and providers are beginning to identify their own preferred therapeutic substitutions through clinical review, chemical analysis, and negotiated supply agreements with different pharmaceutical manufacturers. While there are more than 6,000 prescription drugs available today, within 36 therapeutic classes, 110 drugs represent 80% of all prescription drug expenditures.

In each therapeutic category, the physician is given a choice of drugs to prescribe. Unless a patient has a medical need for a different drug, the most effective and lowest-cost option is the preferred prescription choice. Formularies can be mandated or used for prescribing guidelines. In 1992, about 80% of HMOs used formularies compared to 44% in 1990. In participating HMOs, formulary drugs are used to fill prescriptions about 87% of the time primarily involving staff physicians which are only responsible for one formulary.

The first problem facing out-patient physicians today is that with the plethora of prescription drug benefit plans, which currently only cover 50% of the out-patient prescription drug expenditures, formulary based cost-containment are ineffective if physicians have different patients on different plans and if they have no idea what are the preferred prescription choices when they write a prescription. This problem will continue to increase as patient coverage and the number of drug plans increase.

The second problem facing the formulary is that the feedback loop back to the physician is expensive and ineffective. First, the companies that manage the pharmaceutical benefit employ staffs of pharmacists to contact physicians when there is a potential therapeutic alternative. Unfortunately, this effort is retrospective and uses traditional communications channels which may not occur for several days after the prescription is written and may not result in a "counter-detail" of the physician because they still have the final decision-making responsibility. As more patients are covered by such plans, the communication with the physician is going to become more difficult as they have more patients and less time to respond.

Drug Utilization Review (DUR): According to Alex. Brown, "DUR monitors prescribing patterns to identify inappropriate or unnecessary prescription practices in three ways: (1) prospective review, which requires pre-authorization for specific drugs; (2) concurrent DUR, which adjudicates claims electronically and screens for adverse interactions as the prescription is filled; and (3) retrospective review, which assesses the patient's history to predict potential future adverse reactions to particular drugs or combinations of drugs over time."

Similar to the formulary, there is no current way to adequately inform the out-patient physician of any problems. Again, all communication is attempted on a retrospective basis.

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INFORMATION TECHNOLOGY AND PHYSICIAN USE

Since physicians are mobile professionals, the current information technology resident on the desktop or at the home is not very effective for point of service assistance. Fortunately, through the miniaturization of semiconductors, the development of software with "friendly" graphic user interfaces, and the ability to communicate through wireless devices, the physician can be linked into information systems that encourage utilization management and complement the mobile work environment. PPN will rely on a new class of electronic devices known as Personal Digital Assistants (PDAs). PDAs are low-cost easy-to-use pocket-sized pen-based computers which allow mobile professionals such as physicians to communicate from anywhere over wireless networks.

PHYSICIANS' PRESCRIBING NETWORK SERVICES

1. Online Formulary: With the cooperation of the leading companies that manage prescription drug benefit programs, PPN links the physician with the various formularies through an electronic prescription pad ("Smart Script") which helps the physician identify the preferred prescription choice at the point of prescription writing. PPN's proprietary Smart Scripts software allows for continuous updating of formularies and seamless integration into the prescription writing process.

No matter which plan a patient is covered by, while the physician is writing a prescription, he is made aware of any therapeutic alternatives at the appropriate time. This will obviate the need for pharmacists to retrospectively contact the physician about such alternatives.

```
┌──────┐     ┌──────┐     ┌─────────────────┐     ┌──────────────┐
│  MD  │ ⇄  │ PPN  │ ⇄  │  Rx Benefits Co │ ⇄  │  Pharmacist  │
└──────┘     └──────┘     └─────────────────┘     └──────────────┘
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2. Online Prospective Drug Utilization Review (DUR): Through the link with pharmaceutical benefit programs, a physician will be able to complete a prospective DUR by electronically accessing the patient's drug history. This review procedure can avoid duplication of therapy and avoid drug interaction and allergy problems.

3. Electronic Transmission of Prescriptions to Pharmacists: Through the link with the pharmaceutical benefit programs, the patient can direct the prescription to the retail or mail-order distribution outlet of their choice. This linkage will eliminate paper and patient time at the pharmacy.

4. Online access to other information and services: In addition, the pharmaceutical benefit programs can create additional services through the link with the physician. These services can include, full drug information, patient eligibility verification, patient instructions, sample ordering, refill alerts, and step therapy alternatives.

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PHARMACEUTICAL BENEFITS PROGRAMS

Pharmaceutical Benefits Programs are managed by a handful of companies which have invested hundreds of millions of dollars in information systems to provide Formulary and Drug Utilization Review capabilities for both large employers, HMOs and other plan sponsors. In fact, while HMOs may have ample purchasing power to pursue this business for themselves, millions of lives are necessary to recoup the cost of these investments. For example, FHP, one of California's largest and oldest HMOs, just entered into an agreement with one of the following companies to "buy" rather than "make" its pharmaceutical benefits program. These companies include (*):

Caremark, formerly a division of Baxter, is $1.5 billion supplier of integrated services including drug benefits, home infusion, and physician services. The company's integrated drug benefit programs serve more than 8.0 million people.

Diversified Pharmaceutical Services (United HealthCare), a subsidiary of a national HMO, offers pharmacy networks and claims processing products that use group purchasing power and utilization control techniques to contain health care costs. United provides managed pharmaceutical care to approximately 7.5 million people in this subsidiary, which is one of the fastest growing segments of its business and now comprises about 15% of profits. Diversified's primary market is other HMOs.

Express Scripts is one of the nation's few fully integrated pharmacy benefit managers, servicing plan sponsors through a preferred network of retailers and an in-house mail-order facility. Founded by NY Life in 1986 primarily to manage its drug benefit for its 650,000 Sanus (HMO) subscribers, Express Scripts has branched out to nonrelated customers and now serves over 3 million people. Group purchasing, formulary compliance, and substantive drug utilization review contribute to savings of 25-35% on plan-sponsor pharmacy costs. Express has recently entered into a five year exclusive agreement with FHP, a California HMO.

Medco Containment Services is a leader in the pharmacy management business, serving 33 million people through integrated retail and mail-order pharmacies. Medco has integrated formularies, which allow its national customer base to benefit from exclusive, discount contracts with manufacturers for "preferred" cost-effective drugs, and aggressive drug utilization reviews. Medco is actually changing physician prescribing patterns through education. With this trend and the loss of the pricing pedal in the U.S. market, drug companies are rapidly recognizing Medco's ability to drive market share through active education of physicians of cost-effective alternative therapies. In response, they are entering into market-share-driven exclusive rebate contracts with Medco. In addition, Medco has added other special services such as employee assistance programs, mental health management and institutional pharmacy to serve nursing homes and prisons.

PCS Health Systems (McKesson) is the nations largest processor of prescription claims, amounting to almost 25% of the out-patient drug market. While PCS's core business has been to supply traditional indemnity plans, the market is moving to managed care programs. PCS just recently acquired Clinical Pharmaceuticals, Inc. and its Clinical Pharmacy Advantage which provide integrated managed prescription benefits programs. In addition, PCS has been selected by the National Electronic Information Corporation to streamline the system and electronically process claims for this group of insurance companies. This puts PCS in the center of the development of important standards for the development of the electronic patient record. McKesson Drug Co. is the world's largest distributor of Pharmaceuticals and other health care products. McKesson had more than $10 billion of total corporate revenues for 1992.

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Value Health is the leading independent provider of managed care pharmaceutical products to large, self-insured employers through its ValueRx subsidiary, which presently serves about 7.5 million people, and accounts for about 70% of revenues. With more large employers migrating to self-insuring and to carving-out prescription benefits, Value has been aggressively increasing its product line to meet this growing market segment.

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PHYSICIANS' PRESCRIBING NETWORK

Organizational Planning

Item	Participants	Dates	Req Funding
Organize Physicians	P.O.L. Physician Groups	Current	NA
Organize Technology	P.O.L. General Magic Motorola/ARDIS Apple	Current	NA
• Prototype • System Design	ARDIS Bus. Partner Solutions	June 7	NA TBD
Study Cost Benefits	Lewin or other	Current	TBD
Organize Plan Sponsors • Collect Formulary Data	McKesson, Medco, Caremark, Divrsfd, Express, Value, etc.	Current	NA
Review State Pharmacy Laws and Work with Boards/ Lawyers	LeBeouf, Lamb	Current	TBD
Develop Smart Script Software • Feature Design • Integration of Patient Record & Claims Processing	P.O.L. Medical Societies Genl. Magic Ref. NEIC	Current	TBD
Regional Pilot Test Program	Lenox Hill Hospital Others TBD	Fall '93	TBD
Hardware Devices to Top 5% of MD Prescribers	Motorola/Apple Private Investors	1Q '94	TBD
Hardware Devices To Remaining MD's	Capital Markets	2Q '94	TBD

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APPENDIX

Physicians' Online, Inc.

Physicians' Online is a personalized online medical information and communications service dedicated to empowering physicians with the tools essential to advance the quality and control the cost of health care through informed decision-making.

Physicians' Online ("Company") is an innovative new electronic medium designed to evolve into a comprehensive national medical information and communications network servicing the entire health care industry. The Company's online information products and communication services provide physicians with powerful tools to manage Medical Knowledge, Prescriptions, and Patients. Physicians' Online provides a distribution outlet for third-party produced information products and services. Physicians' Online also provides valuable proprietary information services to other industry participants including managed care organizations and the pharmaceutical industry.

Phase I - Medical Knowledge Management

Online medical information and communication services which are readily accessible and free of charge to member physicians through optional online advertising support. The Company has assembled the most powerful, yet user-friendly, collection of medical information tools available from leading third-party sources. The core information products target three key areas of identified information need, including medical literature (MEDLINE), medical diagnosis (QMR), and drug information (USP). *Physicians' Online* is being developed in cooperation with major medical societies, pharmaceutical manufacturers & marketing organizations, hospitals, managed care organizations, and leading technology & third-party content providers.

Implementation: 1993 through 1994

Phase II - Prescription Management

Online prescription fulfillment and cost containment programs made possible through the use of "Smart Electronic Prescription Pads" (PDAs). This network is being developed in cooperation with managed care organizations, hospitals, pharmacists, pharmaceutical distributors, leading technology providers, and other health-care participants.

Implementation: 1994 through 1996

Phase III - Patient Management

Online patient information for efficient retrieval and transaction processing resulting in enhanced clinical and administrative efficiency and cost-containment. This network is being developed in cooperation with corporate employee benefits programs, private health insurance carriers, out-patient laboratories, electronic claims processors, installment credit organizations, hospitals, and other health care participants.

Implementation: 1995 through 1997

The Company's competitive advantage is based on its ability to attract physician use. Founded by practicing physicians with extensive experience delivering practical information products to busy clinicians, the Company has developed a market-driven product strategy designed to win maximum professional acceptance and use. The Company is establishing critical strategic alliances with leading participants in every major health care market segment. The Company is currently working with several leading content and service providers to develop new products and services for this expanding multi-billion dollar market opportunity.

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Physicians' Online: 5 Year Plan

To empower physicians with the tools essential to advance the quality and control the cost of health care through informed decision-making.

	Phase I	Phase II	Phase III
	0 - 2 yr	**1 - 4 yr**	**3 - 5 yr**
Time Frame	Medical Knowledge Management	Prescription Management	Patient Management
Essential Tools	Physicians Online	Physicians' Prescribing Network	National Health Card Network
Vehicle		Pharmacists' Online Pharm Reps' Online Managed Care Online	
Potential Membership	600,000 physicians 10,000 pharmaceutical execs	450,000 physician 75,000 pharmacies 50,000 drug reps	250 million patients 10,000 hospitals other health care participants
Core Markets	MEDLINE Rx Micromarketing	Prescription Fulfillment Rx Cost-Containment	Patient Administration Cost-Containment Programs
Market Size	$50 million / $7 billion	>$70 billion	>$500 billion
Market Size/MD	$1000 / $15,000	>$150,000	>$1,000,000
Secondary Markets	• Clinical Databases • Decision-Support Tools • News & Financial Services • Special Interest Forums • other areas of identified need	• Home Care • Managed Care • Pharmacy Network • "Electronic Detailing" & Rep Support	• Electronic Patient Record • Outpatient Laboratory Transactions • Patient Health Maintenance
Main Revenue Sources	• Pharmaceutical Advertising • Pharmaceutical Micromarketing Information • Membership & Usage Fees	• Prescription Processing • Micromarketing Information • Membership & Usage Fees	• Patient Transaction Processing • Communication Services • Micromarketing Information • Membership & Usage Fees
Competitive Advantage	• "Medical Info Vending Machines" • Sophisticated MD Targeting ("Ad Wizard"/ "Smart Ads") • Installed Terminals, PDAs, & PCs • Computer-Sophisticated Members • Medical Society Support • Pharmaceutical Industry Support • Third-Party Office Systems Support • Pharmaceutical Executives' Online • User-Friendly Interface • Proprietary Text-Retrieval Software • Proprietary Psychometric Mktg Data	• "Smart Electronic Prescription Pads" (PDAs) • Installed Terminals, PDAs, & PCs • Automated Prescriber Assistance Programs • Proprietary managed care applications • National Electronic Formularies • Proprietary Prescriber Profiling • Patient Prescription Profiles/ DUR • Proprietary Psychometric Marketing Data	• "National Health Card" • Installed-base of diverse POS/PON entry-points linking integral industry participants • Electronic Patient Transactions Network • Third-Party Office Systems Support • Hospital Systems Support • Cellular Communications link to Physicians
Strategic Alliances	• Medical & Professional Societies • Pharmaceutical Companies • Pharmaceutical Marketing Cos • Prescription Data Marketing Companies (IMS/ MMG/ PMS) • Third-party Content Providers (NLM/ Camdat/ USP/ CAMD/ Insurance cos) • Medical Office System Companies • Technology Partners (CompuServe/ Sybase/ Conquest/ Coconut/ Apple/ Sun/ HP/ Cube)	• Prescription Fulfillment Companies (Medco/ McKesson/Value/ etc) • Pharmacies/Pharmacist Societies • Managed Care Organizations • HMOs/ PPOs/ IPAs • Hospital Chains • Hospital Formularies • Corp Employee Benefits Programs • Medical Office System Companies • Technology Partners (AT&T/ Apple/ EO/ General Magic/ Motorola/ HP/ ARDIS)	• Corp Employee Benefits Programs • Private Health Insurance Carriers • BC/BS/Medicaid/ Medicare • Out-Patient Labs (MetPath/ BioScience/ SKF/ NHL) • Outpatient Testing Companies • Installment Credit Organizations • Electronic Claims Processing & Clearing Houses (NEIC/ EDS) • Medical Office & Hospital Systems Companies
Critical Technologies	• Systems Integration of existing hardware & software technology • Packet Data Network technology • Simple Text Retrieval Software • Third-party Content Development	• "Personal Digital Assistants" (PDAs) • Data network technology • Proprietary PDA applications development • Personal Info Management (PIM)	• Systems Integration • Proprietary patient administration & cost-containment applications development • Cellular data network technology
Infrastructure Milestones	• 150,000 physician members • 5,000 hospital members • 5,000 hospital-based terminals • 5,000 PDAs in Physician Offices • 150,000 additional POL software installations	• 450,000 physician members • 10,000 hospital members • 20,000 hospital-based terminals • 450,000 PDAs • 500,000 additional POL software installations	• 600,000 physician members • 10,000 hospital members 50,000 hospital-based terminals • 600,000 PDAs • 800,000 additional POL software installations
Infrastructure $	$10,000,000	$250,000,000	$500,000,000
Infrastruct$/ MD	$100	$500	$1000

BUILDING A WIRELESS FUTURE

It started with cellular phones. Now, new gadgets and networks are transforming communications

At the dawn of the cellular-phone era a decade ago, American Telephone & Telegraph Co.'s market researchers predicted that, by the turn of the century, about 900,000 mobile phones would be in use in the U.S. Not even close. With the millennium still seven years away, that number has been exceeded—12 times over.

America's rapid embrace of cellular—repeated around the globe—has created, almost overnight, a $15 billion-plus industry. Now, new technologies such as digital cellular and personal communications networks (PCNs) hold the promise of explosive growth in wireless markets for the remainder of the decade and beyond (table). And after first grossly underestimating the phenomenon, AT&T and other big players in communications, computers. consumer electronics, and information services are pursuing the market with the fervor of converts.

Over the next few years, companies ranging from AT&T and IBM to L. M. Ericsson and Matsushita Electrical Industrial will invest billions to create a new world of wireless communications.
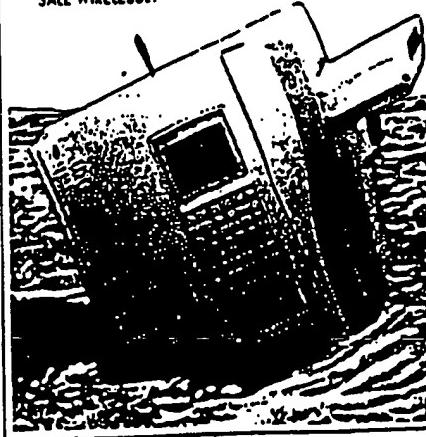
AT&T last year agreed to pay $3.8 billion to buy one-third of McCaw Cellular Communications Inc., the leading cellular carrier. Sprint Corp., the No. 3 long-distance carrier, paid $4.7 billion for Centel Corp., mainly to get that company's cellular properties. Motorola Inc. is looking for partners to help fund Iridium, a $3.8 billion satellite system that would allow wireless calls anywhere on earth. And two deep-pockets alliances—Ardis and Ram Mobile Data—are building national wireless data networks.

QUICK FIX. Meanwhile, more than 100 companies and groups—including cable-TV operators—have applied to the Federal Communications Commission to operate PCN systems. A twist on cellular, PCN would use hundreds of micro-cell transmitters to blanket a calling area and provide more than 20 times the capacity of conventional cellular. The pocket-size phones of PCNs will be cheaper than cellular phones and might serve as cordless phones indoors and mobile phones outdoors. PCN calling fees also are expected to be lower than cellular. Some investors and analysts predict PCN could compete with the wired nets of local phone companies. In Eastern Europe and elsewhere, wireless is being used to modernize phone service quickly—avoiding the time and expense of stringing wires (box, page 60).

There's also a scramble to create the hardware and information services to take advantage of the new invisible infrastructure. Alone and in groups, giants such as IBM and Motorola are designing wireless-phone and computer combinations. To build its Newton, a handheld "personal communicator" and organizer, Apple Computer Inc. has teamed up with Japan's Sharp Corp. The personal-computer maker is also collaborating with Germany's Siemens to tie office phone systems to Newton. A competing group, including AT&T, Matsushita, and Olivetti, is backing EO Inc., another maker of personal communicators. Chipmaker Intel Corp. is working with Swedish phone-equipment maker Ericsson. In software, Apple spin-off General Magic Inc. has signed AT&T and others to back its Telescript program as the lingua franca of wireless networks.

Driving this whirlwind activity is a vision of "anytime, anywhere" communi-

SPEED CHECK
SYMBOL TECHNOLOGIES

▼ STORE CLERKS CAN SCAN IN THE PRICE, TAKE A CREDIT-CARD PAYMENT, AND RECORD THE SALE WIRELESSLY

PERSONAL COMMUNICATOR
IBM

▶ ON THE GO, YOU COULD RECEIVE E-MAIL AND MAKE REGULAR CELLULAR CALLS WITH THIS PROTOTYPE

DIGITAL PERSONAL COMMUNICATOR
MOTOROLA

▶ A POCKET MODEL THAT'S CORDLESS AT HOME AND A CELLULAR PHONE OUTDOORS

INFORMATION PROCESSING

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cations. The premise is that wireless digital networks, feeding information to powerful handheld phone-computer-fax hybrids, will alter the way people live and work—redefining what's a workplace, a store, or a library. Using a personal communicator, you might trade stocks while sitting on a train, order a pair of gloves from an electronic L. L. Bean catalog while riding on a ski lift, or look up a legal precedent from a computerized law library while lolling in your backyard. "You'll have incredible power in your pocket at a very low cost," says Robert M. Kavner, an AT&T group executive who is helping to lead the phone company's charge into the wireless age. **SEA CHANGE.** As the surprising popularity of cellular shows, the shift to wireless is a more powerful force than anybody realized 10 years ago. Now, Kavner and other enthusiasts say it may turn out to be a shift as profound as the move from gaslight to electric bulbs, trains to airplanes—or mainframes to PCs. "The last 100 years have been the wireline century," says Thomas E. Wheeler, president of the Cellular Telecommunications Industry Assn. "We have just embarked upon the wireless century."

That assumes, of course, that the new networks fall into place smoothly.

That's a big "if." First, it will cost billions of dollars and take years to upgrade today's analog cellular works to digital technology. And Washington has yet to allocate the radio spectrum needed for PCN systems.

Doling out spectrum space could be done quickly through auctions, a move the Clinton Administration now backs. Auctions would replace time-consuming competitive hearings or the lotteries that created windfalls for lucky winners in the early days of cellular. Opponents of auctions worry that big companies might buy up much of the spectrum at the expense of small ones, but supporters say companies with promising technology should be able to get the necessary funding to bid.

Perhaps the biggest question mark is the health issue. Early this year, the cellular industry was rocked by reports suggesting that handheld cellular phones might be linked to brain cancer. Evidence connecting radio emissions with any form of cancer remains inconclusive, but the scare has the cellular in-

ARDIS TERMINAL
MOTOROLA

▶ TECHNICAL STAFF CAN KEEP IN TOUCH WITH HEADQUARTERS VIA THIS WIRELESS MESSAGE NETWORK

IRIDIUM PHONE
MOTOROLA

◀ LOOK OUT, WORLD. THE IRIDIUM SATELLITE SYSTEM WOULD ALLOW CALLING ANYWHERE ON EARTH

AT&T-EO COMMUNICATOR
EO

▲ LOOK MA, NO KEYBOARD: A PHONE-FAX-COMPUTER HYBRID THAT READS HANDWRITING

NEWTON
APPLE COMPUTER

▶ THIS PERSONAL DIGITAL ASSISTANT EVENTUALLY WILL HANDLE WIRELESS FAXES AND E-MAIL

> "You'll have incredible power in your pocket at a very low cost"
> —a shift as big as from gaslight to electric bulbs
>
> **ROBERT M. KAVNER**
> *AT&T group executive*

venture of Motorola and IBM. Originally created for IBM's technicians. the setup not only tells workers what and where the next assignment is but also dives into a data base for such information as the date of the last repair and the name of the person to see. Before, Pitney Bowes reps phoned in and arrived with "whatever information they could scribble on their hand or the back of a pad." says Murray D. Martin, president of Pitney Bowes Copier Systems.

Now, technicians arrive with all the necessary information. And if they need a part from the repair depot, they can order it over the Ardis system and have it delivered. Martin figures the system has improved productivity 12% to 15% and raised customer satisfaction. But it came at a price: about $130 million, including a computerized dispatch setup. **GETTING SET.** So far, only a few pioneers have been willing to pay such high prices for the benefits of wireless. Among them are the two package-delivery giants. Federal Express Corp. built its own private radio network, and United Parcel Service of America Inc. recently organized a national network by piecing together cellular-phone systems. But as costs plunge, thousands of other businesses will follow. Motorola, for example, predicts that by 2000, as many as 20 million U.S. workers will be walking around with wireless data terminals. Motorola estimates the market for such two-way wireless setups should hit $5 billion then.

Corporate America seems ready. In a survey of 3,500 top executives by Deloitte & Touche, more than 90% said they expected wireless communications to boost productivity by the mid-1990s. At software maker Microsoft Corp., Nathan Myhrvold, vice-president for advanced technology and business development, sees

> The change won't take place overnight. "It takes 10 years typically before a new product really takes off"
>
> **GEORGE M. C. FISHER**
> *Motorola chairman*

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dustry racing to prove that a world of pocket phones and laptop computers with wireless modems will be safe. "If people are scared of having a radio next to their ear, do you think they'll be willing to have a radio in their lap?" asks one computer-industry executive.

Another issue: People already overwhelmed by junk mail, fax frenzy, and nonstop phone solicitation are apt to object to the intrusion of anytime-anywhere communications. There's also the question of privacy. To send calls to your pocket phone, PCN systems will need to know where you are. And cellular callers already worry about eavesdroppers who use police scanners to pick up their conversations. (Technologists say that won't be possible with forthcoming digital cellular systems.)

NOMADIC MAN. There's already one obvious market for these wireless wonders: the executives and professionals who were the first to take up cellular phones. Freed from the umbilical cords of computer wires, executives can keep up their frenetic travel schedules and still conduct business as if they were in the office. They'll be able to fire off faxes and electronic mail and read files from distant computers wherever they are—including planes. "Man started out as nomadic," says Craig O. McCaw, chairman of McCaw. "It may be the most natural state for human beings."

Wireless technology isn't just for the white-collar set, though. By bringing the latest information to employees wherever they roam, wireless data terminals have the potential to revamp the way service personnel and even production workers do their jobs. Repair people, for example, will have instant access to

parts inventories. Back at headquarters, wireless computer networking will make it a snap to move a PC from one office to another.

Even low-tech equipment will go wireless. Tiny radios on boxcars, freight containers, and truck trailers will help shippers pinpoint deliveries of goods, as they make their way across countries or oceans. Also, it may soon be economical to install transmitters in soda machines to relay information such as how many cans are needed of each beverage.

The bottom line: "There's a very clear-cut productivity argument," says George M. C. Fisher, chairman of Motorola. At Pitney Bowes Inc., for example, 3,500 copier-repair people now carry $2,500 wireless data terminals connected to the wireless Ardis network, a joint

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the market for wireless data devices equaling the market for PCs—now about 30 million units a year.

Before this mass market materializes, however, there are hurdles to clear—both in technology and marketing. The most important technical developments center on the shift from analog to digital cellular. By converting the human voice to computer code, at least 10 times as many calls can be sent over the same slice of radio spectrum. Right off the bat, that should relieve service problems in such cities as Los Angeles, where too many cellular subscribers are often trying to get onto the airwaves at once.

Digital systems are already operating in parts of Europe, where a continent-wide common standard has been adopted. But in the U.S., a dispute over two proposed technologies has delayed the shift. One, called time-division multiple access (TDMA), is ready and would boost capacity up to sixfold by slicing cellular voice channels into split-second time slots, then sending digitized calls in tiny bursts. But just when the cellular industry decided on TDMA, another system appeared. Called code-division multiple access (CDMA), it promises to expand capacity by a factor of 10 by breaking a call into digital "packets," then assigning a computer code to each. The packets are intermingled with packets from other calls and unscrambled at the receiving end. But until the technology dispute is settled, the old-fashioned analog system may be the only nationwide network.

When the digital networks are in place, however, the speed and reliability of sending data should improve dramatically. Cellular operators have already endorsed a format called cellular digital packet data (CDPD) to improve data communications over existing analog networks. Based on an IBM-developed technology, it allows data to "hop" between channels that are not being used for voice traffic.

In the meantime, makers of phones, computers, and consumer-electronics products are working on designs for the gadgets we'll carry around in the wireless world. The most talked-about has been Apple's Newton. This calculator-size device, due out by this summer, will combine the functions of a pocket organizer, such as a calendar and a to-do list, with communications features such as the ability to send and receive faxes. Because Newton has no keyboard, users will write on its screen with a special pen. Software will "read" the writing and act on instructions, Apple says. Newton also will capture handwritten notes to be sent as faxes.

ALL IN ONE. The gallons of ink spilled over Newton have raised some red flags about the move to wireless. "There's more hype than there'll be revenue, at least in the next few years," cautions IBM wireless researcher Satish Gupta. Competitors say that while Newton points to the possibilities of wireless, Apple may have created unrealistic expectations—for itself and the emerging industry. Not only has Apple yet to build a Newton, but when it does, the first version won't have most of the wireless data-communication capabilities that CEO John Sculley has highlighted. "I think the bar has been set too high by the Sculleys of the world," says James C. Hobbs, a vice-president at BellSouth Mobile Data. Apple executives were unavailable for comment.

Even if you can't yet stuff all the necessary electronics into one handheld unit such as Newton, "the technology is all here," says Martin Levetin, executive vice-president at Ram Mobile Data, a service similar to Ardis. The challenge, he adds, "is assembling the pieces and making commercial products out of it."

For now, the solution is to carry two devices—one computer and one communicator. That's how users of the Ram system operate. They carry a Hewlett-Packard Co. 95LX pocket-size PC attached to a radio device from Ericsson-GE Mobile Communications. The $995 package allows executives to send and receive short text messages almost anywhere. Soon, with help from Intel and other chipmakers that are shrinking the communications electronics, it will be possible to do this with one device, such as a notebook PC or personal communicator.

Titus & Sons, a medical-supplies distributor in City of Industry, Calif., is trying out one of the first personal communicators in production. Built by EO, the notebook-size machine stores product information and can send or receive wireless faxes. It also doubles as a cellular phone. The device "is essentially the office we don't have in the field," says Don Durben, a Titus salesman.

Investors in new wireless networks and hardware figure that millions of executives and workers will eventually want such mobility. But it won't happen overnight. "It takes 10 years typically before a new product really takes off," says Motorola's Fisher. In addition to technical issues, there is price. The EO personal communicator with the cellular-communications option, for instance, costs about $2,800. Apple says Newton will be priced somewhat under $1,000. Experts say a mass

BUILDING BLOCKS FOR THE WIRELESS WORLD

Some of the technologies being developed for a new era of communications

DIGITAL CELLULAR By moving from today's analog system to new digital technology, cellular phone-system capacity will expand dramatically, and data communications via cellular will become easier

PERSONAL COMMUNICATIONS NETWORKS, OR PCNs A system of cheap pocket phones using "microcell" radio transmission that eventually could replace wired phones, even in the home

SATELLITE PHONES These systems, such as Motorola's proposed Iridium service, would ring the earth with low-orbit satellites to connect calls to any point on the globe

CELLULAR DIGITAL PACKET DATA An enhancement planned for today's analog cellular phone systems to allow "packets" of data—electronic mail, for example—to "hop" between temporarily free voice channels

PACKET RADIO These systems, such as Ardis from IBM and Motorola and Ram Mobile Data from BellSouth and Ram Broadcasting, allow two-way, data-only communications to handheld devices

PERSONAL COMMUNICATORS The first models, such as those from AT&T/EO and Apple Computer, appear this year. Think of them as mobile PCs of the wireless age

WIRELESS COMPUTER NETWORKS Linking PCs and other computers by radio wave eliminates miles of costly, confusing cables and makes it much easier to reconfigure systems

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market won't materialize until gadget prices drop below $500.

Even then, the demand will depend a great deal on the types of wireless services available. Information providers such as Mead Corp. say they want to send their computerized data. such as newspaper and magazine stories. over the airwaves. But none has yet announced a concrete plan. In the process of launching wireless services, "there will be a lot of players who will lose money," predicts Dennis Patrick, the former FCC chairman who heads Time Warner Inc.'s wireless efforts.

Steep costs, high risks, and the need to set standards are already pushing wireless pioneers into complex alliances. "We're partnering with some of our future competitors in order to make this world happen," says AT&T's Kavner, who has managed the phone company's partnerships with EO and General Magic. Among backers of either or both are such potential AT&T rivals as Matsushita, Motorola, and Sony.

One big motivation behind such strange-bedfellows relationships is the fear of getting stuck with a Betamax product or service in a new VHS world. Without cooperation, it "will stunt the growth of the industry," says Frank T. Wapole, chief executive of Ardis. Cooperation may also be critical in getting federal regulators to dole out the needed airspace for wireless services.

BIG BOYS' GAME. Even as they team up, however, the major players in computers and communications are jockeying to become the big wheels in the wireless world, too. Motorola is perhaps the best positioned, since it's among the largest makers of cellular-transmission equipment, cellular phones, and pagers. It also owns pieces of wireless networks in the U.S. and abroad. And it's working on personal communicators.

Motorola has AT&T to contend with, though. The phone giant plans to market McCaw's cellular service using the powerful AT&T brand. And AT&T has bigger plans than McCaw. "It's not just cellular we're interested in, it's all of wireless," says Victor A. Pelson, an AT&T group executive who heads its communications services business. That's why the company plans to test PCN systems over its old microwave long-distance towers, which have been little used since the move to optical fiber. AT&T's stated goal is to be the leading provider of "anytime, anywhere" communications.

And Apple isn't the only computer giant that is aiming for the wireless world. Although wounded by its recent financial troubles and executive-suite turmoil, IBM is making substantial commitments to wireless. In addition to its half-interest in Ardis, it has a prototype personal communicator and is developing wireless PC networks. In addition, IBM is expected to take a stake in In-Flight Phone Corp., the Oak Brook Terrace (Ill.) developer of a digital air-to-ground phone system founded by wireless pioneer John D. Goeken.

So the race to make a wireless world has begun. The biggest players in the computer, communications, and information industries anticipate a new stage in technology, which, as the microprocessor did in the 1980s, will create vast new markets and new fortunes. They see empires in the air.

By Bart Ziegler in New York, with Mark Lewyn in Washington, Robert D. Hof in San Francisco, Lois Therrien in Chicago, and bureau reports

FOR EMERGING COUNTRIES, CELLULAR IS NO LUXURY

Two years ago, the Hungarian village of Uri, 25 miles south of Budapest, was in trouble. Most of its 2,700 residents were thrown out of work when the truck-parts factory went bankrupt. Their best hope: Jozsef Nagy's electrical-fixture factory. But the town had only one phone—a hand-cranked model—so Nagy had to spend seven days a week driving around taking orders. After paying $2,300 for a cellular phone, however, orders started

HUNGARY: LAMP SALES BY MOBILE PHONE

coming to him. Today, he runs a 400-employee, $2.5 million business, mostly from his red Honda Accord. Back in the office, he has four more mobile phones. "Without the phones," Nagy says, "we'd all be dead ducks."

Mobile phones have become a basic survival tool for emerging nations. From Indonesia to Pakistan to the former Soviet bloc, cellular is quickly creating modern phone links. Upgrading old wired systems could take decades.

This summer, after four years and a modest $85 million investment, Hungary's Westel Radiotelefon will finish its nationwide network. The joint venture of state-owned Hungarian Telecommunications Co. (HTC) and U.S. West Inc. has signed up more than 24,000 subscribers. For one-third of them, the mobile phone is their only one.

Nobody expected Westel to take off so quickly. "This was unknown territory," says General Manager András

Sugár. But it is rapidly becoming part of the fabric of daily life. Near Miskolc, in northeastern Hungary, dairymen use Westel phones to drum up business for once-dying farms. In the rural district of Kunadacs, Dr. Kalman Farkas dispatches ambulances from his car phone: His region of 140 square miles has only 30 wired phones. "We're saving lives," he says.

GO-GO ECONOMY. Westel has been an unexpected boon for U.S. West, which owns 49% of the venture. At 1,000 a month, customers are signing up twice as fast as expected and are talking more than 6 hours a month, or three times the Western average for cellular callers. In 1992, Westel more than doubled its revenue, to $60 million, and broke even in 1991—two years ahead of schedule. Steven E. Andrews, head of U.S. West's non-U.S. wireless operations, figures his $10 million investment could return 20% to 30% pretax over 10 years, up to twice what it earns at home.

Encouraged by results in Hungary, Andrews has aggressively pursued other franchises. U.S. West now has deals in the Czech and Slovak republics and in Moscow, St. Petersburg, and 11 other Russian cities, making it the biggest cellular player in Eastern Europe. New opportunities include a chance to run one of two new digital cellular nets in Hungary. U.S. West is also likely to be a bidder when the government sells off about 30% of HTC next year.

For ordinary Hungarians, who earn $250 a month, $2,000 for a handset and $1,000 in hookup fees put cellular phones out of reach. But for entrepreneurs in Hungary's go-go economy, no price is too high. Like Nagy, three quarters of subscribers use the phone to run businesses, and 14% say they would go bankrupt without them. "We were hungry," he says, "for something we never knew we were missing."
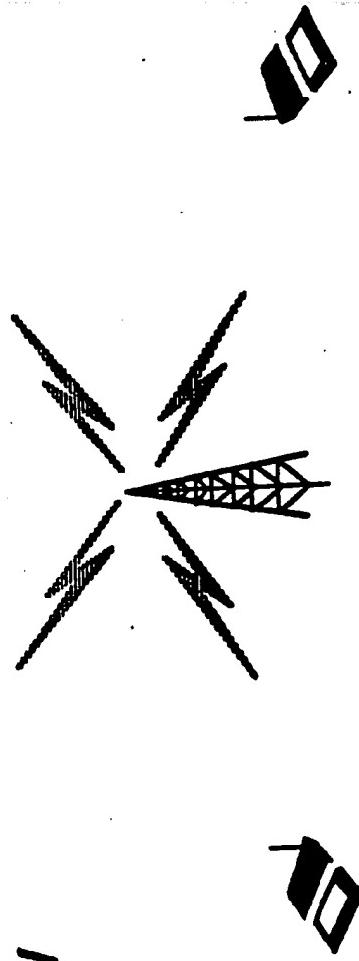
By Jonathan B. Levine in Budapest

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MOTOROLA

Overview

- Wireless Applications
- Radio Service Discussion
  - Ardis Presentation
  - RadioMail Presentation
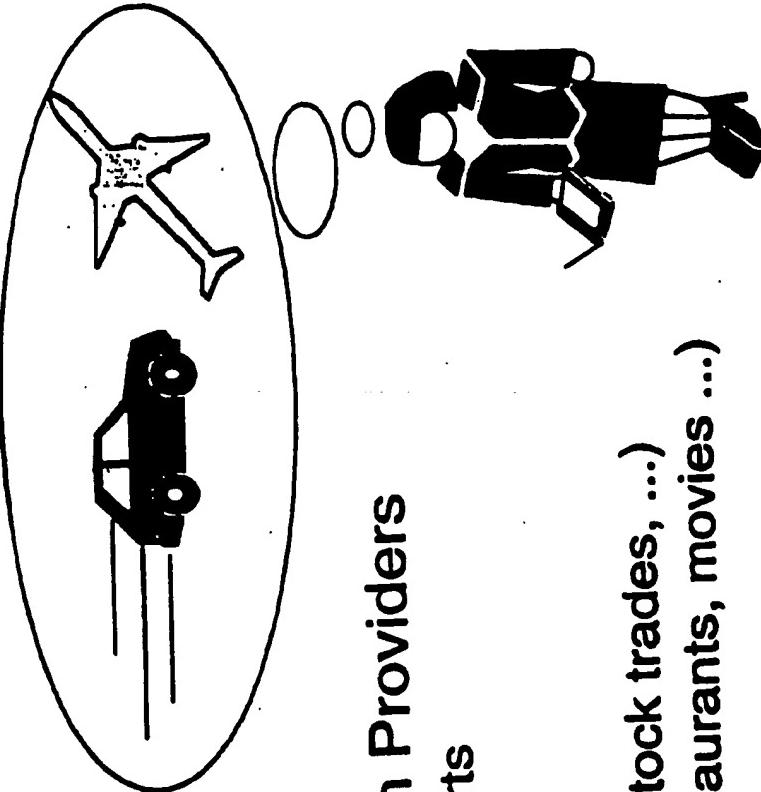- Wireless Application Development
  Discussion

Personal Messaging Products
Paging and Wireless Data Group

2

(M) MOTOROLA

Wireless: "The Freedom Facilitator"

- Messaging
  - Email
  - Scheduling
  - Database Access
- Access to Information Providers
  - News, Weather, Sports
  - Financial Information
- Access to Services
  - Financial Services (stock trades, ...)
  - Online Reviews (restaurants, movies ...)
  - Electronic Shopping

Personal Messaging Products
Paging and Wireless Data Group

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MOTOROLA

Local & Nationwide Applications

- Availability & Coverage
  - Local Coverage
  - Nationwide Coverage with Auto Roaming
- Usage is transparent between devices regardless of physical location
- Devices can be used anywhere there is coverage
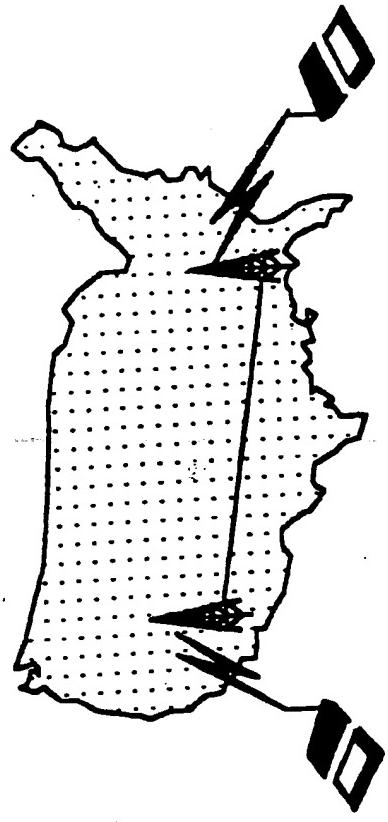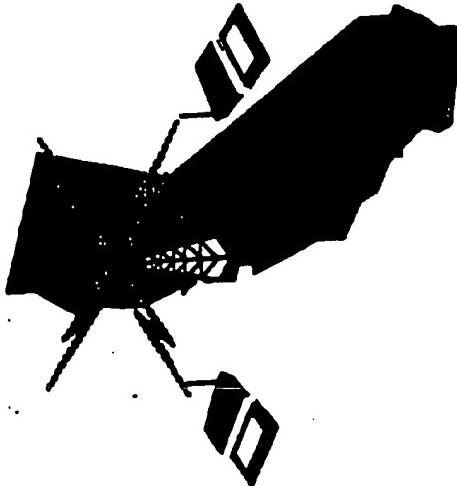
Personal Messaging Products
Paging and Wireless Data Group

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Types of Applications

- Peer-to-Peer
  - General messaging
  - Application-to-application
    - Schedule exchange & resolution
    - Collaborative applications

- Peer-to-Host
  - Database access
  - Wireless Email
  - Services interaction (get latest weather...)
  - ATT Magicmail gateway

- Host-to-Peer
  - Sales Catalog pricing updates
  - Travel itinerary update

MOTOROLA

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ARDIS

NEWS RELEASE

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ARDIS SETS THE STANDARD FOR WIRELESS DATA COMMUNICATIONS

LINCOLNSHIRE, Illinois -- Today, ARDIS is increasing the productivity of thousands of mobile workers by bringing them real-time information solutions through the power of wireless data communications. As the preeminent wireless data network in the world, ARDIS has set the standard for providing mobile professionals with immediate access to the information they need wherever they are.

The brief history of ARDIS signals the tremendous growth of one of the hottest markets of the 1990s. Formed as a joint venture between industry giants IBM and Motorola in April 1990, ARDIS took over commercial operations of networks which had been deployed by the two companies and in production use since 1984. Today, ARDIS has more than 60 customers and 30,000 users on the network and is adding hundreds every month. ARDIS serves the top 400 metropolitan areas and provides wireless coverage in more than 8,000 cities and towns in the 50 states, Puerto Rico and the Virgin Islands.

"Just a few short years ago, wireless data communications only existed as an idea," said ARDIS President Frank Wapole. "Now we predict that there will be millions of users by the end of the decade."

- more -

A Partnership of IBM and Motorola

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The wireless explosion

The advances in portable computing have fueled the explosive growth of the wireless data communications market. The increasing capabilities of small, lightweight portable computers make it possible for a mobile worker to easily receive, manipulate, store and send information in the form that best suits their needs. A salesperson, for example, uses a portable wireless computer to file orders, check inventories, write and check E-mail and create sales presentations.

Cliff Bean of Arthur D. Little, Inc., a highly respected industry research and consulting firm, believes that mobile data applications will grow more than tenfold over the next five years for a current base of several hundred thousand users.

According to Wapole, the ability to send and receive unlimited amounts of text, graphics and images quickly from anywhere in the world is in the not-too-distant future. "The exciting thing is not the technology itself but the multitude of ways that it solves real life business problems," Wapole said. "It's not hard to envision a vast array of applications for wireless."

In a move to dramatically accelerate the growth of wireless data communications, Motorola announced in March 1992 their decision to open the protocols used on the ARDIS network. The open network interface will encourage manufacturers to market ARDIS-compatible products, providing more alternatives for the customer. Telxon, IBM, Motorola, Fujitsu, Itron and AT&T Safari Systems have announced their plans to market products with integrated ARDIS communications capability.

- more -

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Customers

ARDIS has played a leading role in bringing the power of wireless technology to innovative, industry-leading companies. During its first year, the company built an impressive list of 35 customers and signed multi-million dollar customer contracts with Otis Elevator, Pitney Bowes and NCR Corporation. Today, its customer base spans a variety of industries including field service, field sales, transportation, public safety, communications and insurance, serving customers such as United Parcel Service, AVIS, Household Finance, AT&T, New York Department of Transportation, and Maersk.

AVIS Rent-a-Car, uses ARDIS to expedite the rental process for customers. AVIS drivers use an on-board computer to key in the customer's Wizard number, and in less than the time it takes to drive to the lot, the computer tells the driver the color, make and model of the customer's car, as well as its lot location.

"ARDIS made it possible for us to dramatically increase customer service. Now more of our customers spend less time at the airport," said Robert Salerno, senior vice president/general manager for AVIS.

The ARDIS network

As the first nationwide wireless data network, ARDIS has in place a sophisticated network structure that allows mobile workers to access powerful applications via portable computers wherever they are located. Available 24 hours a day, seven days a week in more than 400 U.S. metropolitan areas, the ARDIS network provides on-street and in-building coverage through its more than 1,250 base stations. Its primary network

- more -

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operation facility is located in Lexington, Kentucky with two additional hubs located in Chicago and Los Angeles.

To increase the network's capacity and speed, ARDIS is implementing the first phase of a $150 million network enhancement which will deploy Motorola's 19.2 Kbps protocol system. The expansion, initially directed to the top 30 metropolitan areas, will support automatic roaming, allowing users to maintain instant communications with peers or their company information systems as they travel from city to city.

"If we're going to maintain our leadership status as the world's largest and most advanced wireless data network, we must anticipate and meet current and future demand," Wapole said. "This expansion is driven by that commitment."

Strategic Business Partners

ARDIS has formed partnerships with leading software and application developers to provide turn-key solutions for companies looking for ways to increase the productivity of their mobile workforce. By offering ARDIS-compatible applications, the partnerships leap-frog the time-intensive and expensive application development process allowing customers to realize the benefits of wireless data communications immediately.

ARDIS has named several software application developers as Value Added Marketers (VAM), a business partnership arrangement covering a cross-section of industries including field service, field sales, insurance, transportation and public safety. Service Systems International, Ltd., Business partner Solutions Inc., AST/The DATA Group, Carrier Logistics, Synergistic Systems, Carrier Logistics, and ADP Automotive Claims Services are companies that have formed alliances with ARDIS.

- more -

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ARDIS value-added services

Formed with a core team of proven wireless communications experts, ARDIS provides its customers with a depth of support services. ARDIS provides its customers field technical support, system design support, training and implementation services to ensure the right solution is put into place.

The future

Today, ARDIS is delivering more than 40 million messages each month to and from field personnel providing information critical to their business. In the very near future, ARDIS will help truckers navigate and check traffic status while in route. ARDIS will enable vending machines to automatically notify distributors before they are empty, and enable residential security systems to alert police or fire departments. Individuals will communicate with family, friends and co-workers, and handle personal banking transactions.

"Today, these applications are possible using the ARDIS network. It's not an issue of whether the technology is available, but how the technology is applied to meet the needs of real people," said Frank Wapole. "Our goal is to be the leading enabler of wireless data solutions to meet the needs of millions of people worldwide."

# # #

ARDIS is a registered servicemark of ARDIS Company.

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Physicians' Online

™

Physicians' Prescribing Network

DRAFT 1.1

CONFIDENTIAL

Steven Hochberg
President & Chief Operating Officer

Christian Mayaud, MD
Chairman & Chief Executive Officer

May 1993

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Notice of Confidentiality & Disclaimers
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Physicians' Prescribing Network

Physicians Prescribing Network (PPN) is an online interactive prescription drug ordering system linking physicians with pharmacists and mail-order suppliers via an industry-supported EDI network. PPN provides patients and prescription-drug-benefit plan sponsors the ability to minimize out-patient prescription costs by providing physicians with point-of-need information resources. PPN is designed to complement existing distribution and claims processing networks by linking them directly to the physician.

The convergence of escalating health care costs and the advance of information technology has paved the way for the formation of PPN. While there are a few companies that currently provide pharmaceutical benefit programs for plan sponsors, none have identified a cost effective means of linking the out-patient physician with their well-developed cost-containment and utilization information systems. PPN has developed a cost-effective means to create the required link to the physician.

By creating an industry-wide network, PPN will link physicians, on a wireless basis, directly into all pharmaceutical benefits programs. This linkage will create the tools to empower the physician to increase the quality and lower the cost of prescription drugs in the $40 billion out-patient prescription drug market. These tools include an online formulary, online prospective drug utilization review, electronic transmission of prescriptions to pharmacists, and online access to other information and services.

PPN will provide physicians with the necessary hardware, while the pharmaceutical benefits programs will pay PPN a transaction fee for each prescription. While certain pharmaceutical drug programs may consider creating their own proprietary network, PPN does not believe that a physician will use multiple systems and multiple input devices with multiple interfaces. Instead, successful implementation will require a single universal method to provide drug benefit program information to physicians during the normal prescription writing process. This industry-wide approach is designed to help physicians accept this new technology into their mobile work environment and to avoid the failures that other proprietary network efforts have experienced.

PPN is being organized by Physicians' Online, Inc. (POL), a personalized online medical information and communications service dedicated to empowering physicians with the tools essential to advance the quality and control the cost of health care through informed decision-making. Physicians' Online projects at least 20,000 physician members will be using its online reference, diagnosis, and treatment services by the beginning of 1994. Physicians' Prescribing Network will begin operations in 1994 with a potential membership of over 450,000 physicians. (see Appendix)

PPN is currently in discussion with every major pharmaceutical benefits company and several large physician groups regarding this effort. In addition, PPN is commissioning a health policy consulting group in Washington to study the impact of this effort.

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KEY FEATURES OF PHYSICIANS' PRESCRIBING NETWORK

1. PPN is designed by physicians for physician use. Member physicians can utilize the Network regardless of which plan sponsor or patient is involved.

2. PPN is open" to all plan sponsors, physicians, retail pharmacists, and mail-order suppliers. However, since physicians will not use a system that does not include all plan sponsors, industry-wide participation is required.

3. *Smart Scripts* enables physicians to maximize patient and plan sponsor cost containment benefits by providing the relevant information during the time of prescription writing.

4. Formularies are continuously updated.

5. PPN lowers transaction costs by eliminating paperwork, waiting time, and avoiding miscommunication between pharmacists and physicians.

6. PPN security eliminates unauthorized prescriptions.

7. PPN provides prescription drug benefits providers, retail pharmacists and mail order suppliers with an ability to offer new products/services.

8. PPN utilizes wireless digital radio technology to assist mobile physicians.

9. PPN is hardware independent allowing for maximum access and changing technologies.

10. The initial hardware expense necessary to establish PPN will be minimized by spreading it across a broad industry alliance.

11. PPN is designed to integrate with claims processing information requirements.

12. PPN is designed to access patient record information.

MANAGED CARE OF PRESCRIPTION DRUG BENEFITS

With the public's concern about "runaway and increasing" costs of health care, numerous efforts are underway to lower such costs through programs focusing on practice utilization areas rather than the traditional price controls. In fact, programs that have focused primarily on price controls have been relatively unsuccessful so far because utilization has increased in such programs thus eliminating any benefits from price reductions. However, utilization management, particularly for patient management, requires physician participation and superior information management.

In the area of pharmaceutical drug benefit management, employers can separate out this benefit from the rest of its health care plan which currently account for about 7% of employers' total health care costs. By "carving out" and applying managed care techniques to the pharmaceutical benefit, the employer can better track costs, control utilization, decrease risk, and often lower the premium for the remaining health care benefits which are generally administered by traditional indemnity or managed care companies. Currently, approximately 20% of employers currently carve out pharmaceutical benefits.

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A major business opportunity for managed care companies has emerged through the intense need for management of rapidly growing pharmacy benefit costs", says Alex. Brown & Sons. In fact, the prescription drug segment of health care costs is one of the fastest-growing components of the health care equation that can equal one-third of total post-retiree health care benefits. While there are currently only a few national companies that compete in this segment, a significant investment in information technology is required to provide the following basic services.

Formulary: A formulary guides physician prescribing by listing drugs preferred for treating specific illnesses. Since there are several competing products in most therapeutic prescription drug classes, health care buyers, organizers and providers are beginning to identify their own preferred therapeutic substitutions through clinical review, chemical analysis, and negotiated supply agreements with different pharmaceutical manufacturers. While there are more than 6,000 prescription drugs available today, within 36 therapeutic classes, 110 drugs represent 80% of all prescription drug expenditures.

In each therapeutic category, the physician is given a choice of drugs to prescribe. Unless a patient has a medical need for a different drug, the most effective and lowest-cost option is the preferred prescription choice. Formularies can be mandated or used for prescribing guidelines. In 1992, about 30% of HMOs used formularies compared to 44% in 1990. In participating HMOs, formulary drugs are used to fill prescriptions about 87% of the time primarily involving staff physicians which are only responsible for one formulary.

The first problem facing out-patient physicians today is that with the plethora of prescription drug benefit plans, which currently only cover 50% of the out-patient prescription drug expenditures, formulary based cost-containment are ineffective if physicians have different patients on different plans and if they have no idea what are the preferred prescription choices when they write a prescription. This problem will continue to increase as patient coverage and the number of drug plans increase.

The second problem facing the formulary is that the feedback loop back to the physician is expensive and ineffective. First, the companies that manage the pharmaceutical benefit employ staffs of pharmacists to contact physicians when there is a potential therapeutic alternative. Unfortunately, this effort is retrospective and uses traditional communications channels which may not occur for several days after the prescription is written and may not result in a "counter-detail" of the physician because they still have the final decision-making responsibility. As more patients are covered by such plans, the communication with the physician is going to become more difficult as they have more patients and less time to respond.

Drug Utilization Review (DUR): According to Alex. Brown, "DUR monitors prescribing patterns to identify inappropriate or unnecessary prescription practices in three ways: (1) prospective review, which requires pre-authorization for specific drugs; (2) concurrent DUR, which adjudicates claims electronically and screens for adverse interactions as the prescription is filled; and (3) retrospective review, which assesses the patient's history to predict potential future adverse reactions to particular drugs or combinations of drugs over time."

Similar to the formulary, there is no current way to adequately inform the out-patient physician of any problems. Again, all communication is attempted on a retrospective basis.

INFORMATION TECHNOLOGY AND PHYSICIAN USE

Since physicians are mobile professionals, the current information technology resident on the desktop or at the home is not very effective for point of service assistance. Fortunately, through the miniaturization of semiconductors, the development of software with "friendly" graphic user interfaces, and the ability to communicate through wireless devices, the physician can be linked into information systems that encourage utilization management and complement the mobile work environment. PPN will rely on a new class of electronic devices known as Personal Digital Assistants (PDAs). PDAs are low-cost easy-to-use pocket-sized pen-based computers which allow mobile professionals such as physicians to communicate from anywhere over wireless networks.

PHYSICIANS' PRESCRIBING NETWORK SERVICES

1. <u>Online Formulary:</u> With the cooperation of the leading companies that manage prescription drug benefit programs, PPN links the physician with the various formularies through an electronic prescription pad ("Smart Script") which helps the physician identify the preferred prescription choice at the point of prescription writing. PPN's proprietary Smart Scripts software allows for continuous updating of formularies and seamless integration into the prescription writing process.

   No matter which plan a patient is covered by, while the physician is writing a prescription, he is made aware of any therapeutic alternatives at the appropriate time. This will obviate the need for pharmacists to retrospectively contact the physician about such alternatives.

2. <u>Online Prospective Drug Utilization Review (DUR):</u> Through the link with pharmaceutical benefit programs, a physician will be able to complete a prospective DUR by electronically accessing the patient's drug history. This review procedure can avoid duplication of therapy and avoid drug interaction and allergy problems.

3. <u>Electronic Transmission of Prescriptions to Pharmacists:</u> Through the link with the pharmaceutical benefit programs, the patient can direct the prescription to the retail or mail-order distribution outlet of their choice. This linkage will eliminate paper and patient time at the pharmacy.

4. <u>Online access to other information and services:</u> In addition, the pharmaceutical benefit programs can create additional services through the link with the physician. These services can include, full drug information, patient eligibility verification, patient instructions, sample ordering, refill alerts, and step therapy alternatives.

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PHARMACEUTICAL BENEFITS PROGRAMS

Pharmaceutical Benefits Programs are managed by a handful of companies which have invested hundreds of millions of dollars in information systems to provide Formulary and Drug Utilization Review capabilities for both large employers, HMOs and other plan sponsors. In fact, while HMOs may have ample purchasing power to pursue this business for themselves, millions of lives are necessary to recoup the cost of these investments. For example, FHP, one of California's largest and oldest HMOs, just entered into an agreement with one of the following companies to "buy" rather than "make" its pharmaceutical benefits program. These companies include (*):

Caremark, formerly a division of Baxter, is $1.5 billion supplier of integrated services including drug benefits, home infusion, and physician services. The company's integrated drug benefit programs serve more than 8.0 million people.

Diversified Pharmaceutical Services (United HealthCare), a subsidiary of a national HMO, offers pharmacy networks and claims processing products that use group purchasing power and utilization control techniques to contain health care costs. United provides managed pharmaceutical care to approximately 7.5 million people in this subsidiary, which is one of the fastest growing segments of its business and now comprises about 15% of profits. Diversified's primary market is other HMOs.

Express Scripts is one of the nation's few fully integrated pharmacy benefit managers, servicing plan sponsors through a preferred network of retailers and an in-house mail-order facility. Founded by NY Life in 1986 primarily to manage its drug benefit for its 650,000 Sanus (HMO) subscribers, Express Scripts has branched out to nonrelated customers and now serves over 3 million people. Group purchasing, formulary compliance, and substantive drug utilization review contribute to savings of 25-35% on plan-sponsor pharmacy costs. Express has recently entered into a five year exclusive agreement with FHP, a California HMO.

Medco Containment Services is a leader in the pharmacy management business, serving 33 million people through integrated retail and mail-order pharmacies. Medco has integrated formularies, which allow its national customer base to benefit from exclusive, discount contracts with manufacturers for "preferred" cost-effective drugs, and aggressive drug utilization reviews. Medco is actually changing physician prescribing patterns through education. With this trend and the loss of the pricing pedal in the U.S. market, drug companies are rapidly recognizing Medco's ability to drive market share through active education of physicians of cost-effective alternative therapies. In response, they are entering into market-share-driven exclusive rebate contracts with Medco. In addition, Medco has added other special services such as employee assistance programs, mental health management and institutional pharmacy to serve nursing homes and prisons.

PCS Health Systems (McKesson) is the nations largest processor of prescription claims, amounting to almost 25% of the out-patient drug market. While PCS's core business has been to supply traditional indemnity plans, the market is moving to managed care programs. PCS just recently acquired Clinical Pharmaceuticals, Inc. and its Clinical Pharmacy Advantage which provide integrated managed prescription benefits programs. In addition, PCS has been selected by the National Electronic Information Corporation to streamline the system and electronically process claims for this group of insurance companies. This puts PCS in the center of the development of important

standards for the development of the electronic patient record. McKesson Drug Co. is the world's largest distributor of Pharmaceuticals and other health care products. McKesson had more than $10 billion of total corporate revenues for 1992.

Value Health is the leading independent provider of managed care pharmaceutical products to large, self-insured employers through its ValueRx subsidiary, which presently serves about 7.5 million people, and accounts for about 70% of revenues. With more large employers migrating to self-insuring and to carving-out prescription benefits. Value has been aggressively increasing its product line to meet this growing market segment.

```
  MD                                            PCS
  MD                                            MCS
            Wireless                   VH
            Networks  →  PPN                        Pharmacists
  MD                                 ES
  MD                                 CM
                                               DPS
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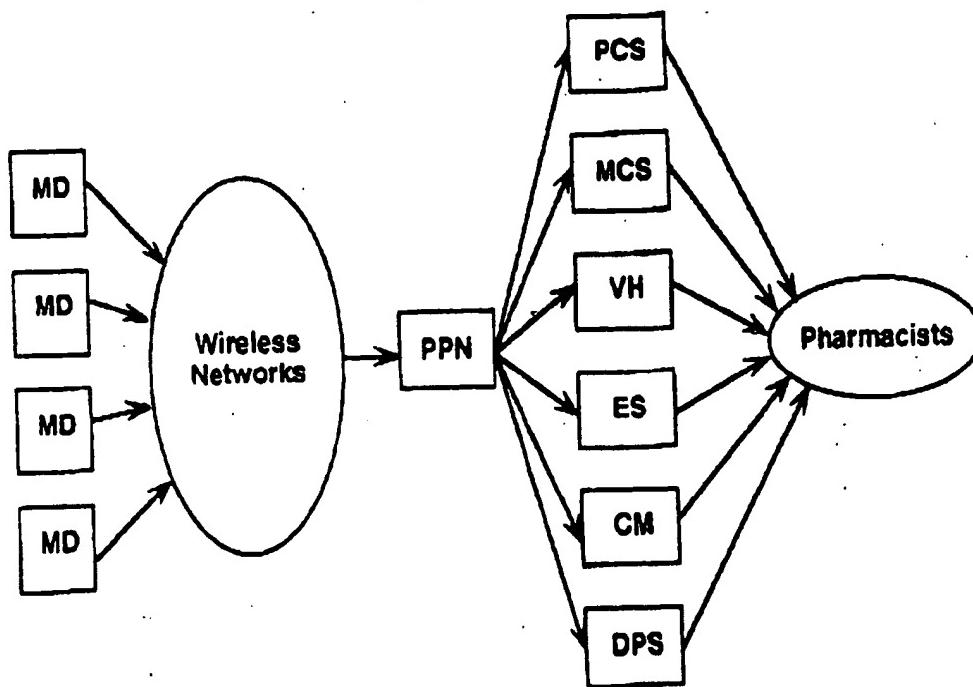
(*) Much of this information was obtained from Alex. Brown & Sons publications.

THB 06041

PHYSICIANS' PRESCRIBING NETWORK

Organizational Planning

Item	Participants	Dates	Req Funding
Organize Physicians	P.O.L. Physician Groups	Current	NA
Organize Technology	P.O.L. General Magic Motorola/ARDIS Apple	Current	NA
• Prototype • System Design	ARDIS Bus. Partner Solutions	June 7	NA TBD
Study Cost Benefits	Lewin or other	Current	TBD
Organize Plan Sponsors • Collect Formulary Data	McKesson, Medco, Caremark, Divrsfd, Express, Value, etc.	Current	NA
Review State Pharmacy Laws and Work with Boards/ Lawyers	LeBeouf, Lamb	Current	TBD
Develop Smart Script Software • Feature Design • Integration of Patient Record & Claims Processing	P.O.L. Medical Societies Genl. Magic Ref. NEIC	Current	TBD
Regional Pilot Test Program	Lenox Hill Hospital Others TBD	Fall '93	TBD
Hardware Devices to Top 5% of MD Prescribers	Motorola/Apple Private Investors	1Q '94	TBD
Hardware Devices To Remaining MD's	Capital Markets	2Q 94	TBD

EXHIBIT H

Physicians' Online: 5 Year Plan

To empower physicians with tools essential to advance the quality and control the cost of health care through informed decision-making.

|	Phase I	Phase II	Phase III
	0 - 2 yr	1 - 4 yr	3 - 5 yr
Time Frame	Medical Knowledge Management	Prescription Management	Patient Management
Essential Tools	Physicians' Online	Pharmacists' Online / Pharm Reps Online / Formularies Online / Managed Care Online	National Health Care Network
Vehicle			
Potential Membership	500,000 physicians / 10,000 pharmaceutical execs	300,000 physician offices / 100,000 pharmacies / 50,000 drug reps	250 million patients / 10,000 hospitals / other health care participants
Core Markets	MEDLINE / Rx Micromarketing	Prescription Fulfillment / Rx Cost-Containment	Patient Administration Cost-Containment Programs
Core Market Size	$50 million / $7 billion	>$70 billion	>$500 billion
Market Size/MD	$500 / $15,000	>$150,000	>$1,000,000
Secondary Markets	• Clinical Databases • Decision-Support Tools • News & Financial Services • Special Interest Forums • other areas of identified need	• Home Care • Managed Care • Formularies • Pharmacy Network • Pharm Rep Support	• Electronic Patient Record • Outpatient Laboratory Transactions • Patient Health Maintenance
Main Revenue Sources	• Pharmaceutical Advertising • Pharmaceutical Micromarketing Information • Membership & Usage Fees	• Prescription Processing • Micromarketing Information • Membership & Usage Fees	• Patient Transaction Processing • Communication Services • Micromarketing Information • Membership & Usage Fees
Competitive Advantage	• "Medical Info Vending Machines" • Installed Terminals, PDAs, & PCs • Computer-Sophisticated Members • Medical Society Support • Pharmaceutical Industry Support • Third-Party Office Systems Support • Pharmaceutical Executives' Online • User-Friendly Interface • Proprietary Text-Retrieval Software • Sophisticated MD Targeting ("Ad Wizard"/ "Smart Ads") • Proprietary Psychometric Mktg Data	• "Smart Prescription Pads" (PDAs) • Installed Terminals, PDAs, & PCs • Automated Prescriber Assistance Programs • Proprietary managed care applications • National Electronic Formularies • Proprietary Prescriber Profiling • Patient Prescription Profiles • Proprietary Psychometric Marketing Data	• "National Health Card" • Installed-base of diverse POS/PON entry-points linking integral industry participants • Electronic Patient Transactions Network • Third-Party Office Systems Support • Hospital Systems Support • Cellular Communications link to Physicians
Strategic Alliances	• Medical & Professional Societies • Pharmaceutical Companies • Pharmaceutical Marketing Cos • Prescription Data Marketing Companies (IMS/ MMG/ PMS) • Third-party Content Providers (NLM/ Camdat/ USP) • Medical Office System Companies • Technology Providers (CompuServe/ Sybase/ Conquest/ Coconut/ Apple/ Sun/ HP/ Cube)	• Prescription Fulfillment Companies (Medco) • Pharmacies/Pharmacist Societies • Managed Care Organizations • HMOs/ PPOs/ IPAs • Hospital Chains • Hospital Formularies • Corp Employee Benefits Programs • Medical Office System Companies • Technology Providers (AT&T/ Apple/ EO/ Motorola/ HP)	• Corp Employee Benefits Programs • Private Health Insurance Carriers • BC/BS/Medicaid/ Medicare • Out-Patient Labs (MetPath/ Bioscience/ SKF/ NHL) • Outpatient Testing Companies • Installment Credit Organizations • Electronic Claims Processing & Clearing Houses (NEIC) • Medical Office & Hospital Systems Companies
Critical Technologies	• Systems Integration of existing hardware & software technology • PDN network technology • Simple Text Retrieval software • Third-party	• "Personal Digital Assistants" (PDAs) • PDN network technology • Proprietary PDA applications development	• Systems Integration • Proprietary patient administration cost-containment applications development • Cellular PDN network technology
Infrastructure Milestones	• 150,000 physicians • 5,000 hospitals • 5,000 hospitals • 5,000 PDAs in Physicians • 150,000 additional POL installations	• 300,000 physician members • 10,000 hospital members • 1,000 hospital-based terminals • 30,000 PDAs in Physician Offices • 100 mobile PDAs • 1,000 additional POL software installations	• 500,000 physician members • 10,000 hospital members • 50,000 hospital-based terminals • 300,000 PDAs in Physician Offices • 400,000 mobile PDAs • 800,000 additional POL software installations
Infrastructure $	$10,000,000	$50,000,000	$250,000,000
Infrastructure $/MD	$100	$200	$500

THB 07125

EXHIBIT I

Physicians' Online
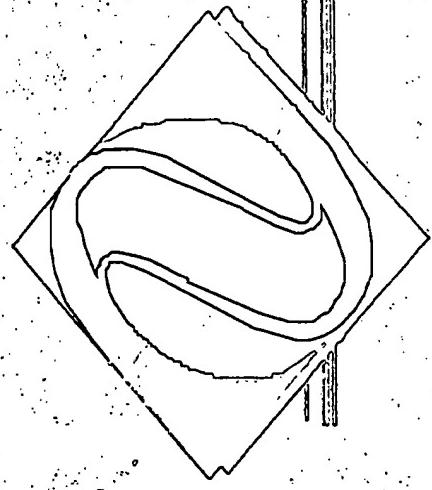
A personalized online medical information & communications service dedicated to empowering physicians with the tools essential to advance the quality and control the cost of health care through informed decision-making.

Physician as Knowledge Worker

Problem & Opportunity

Info → PHYSICIAN → Rx
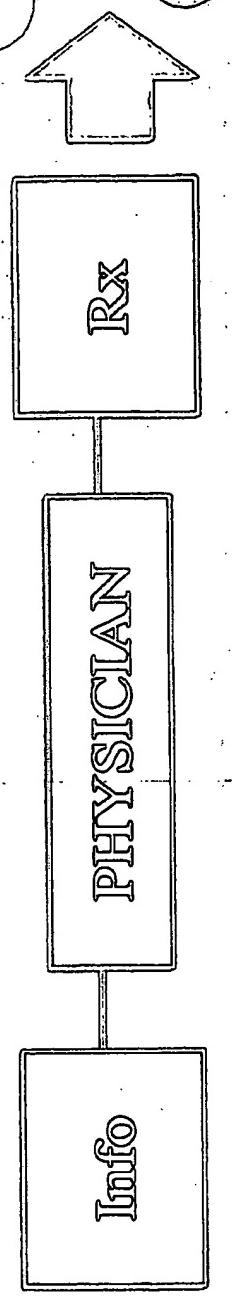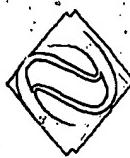
PCs in Health Care

Barriers to Physician Use
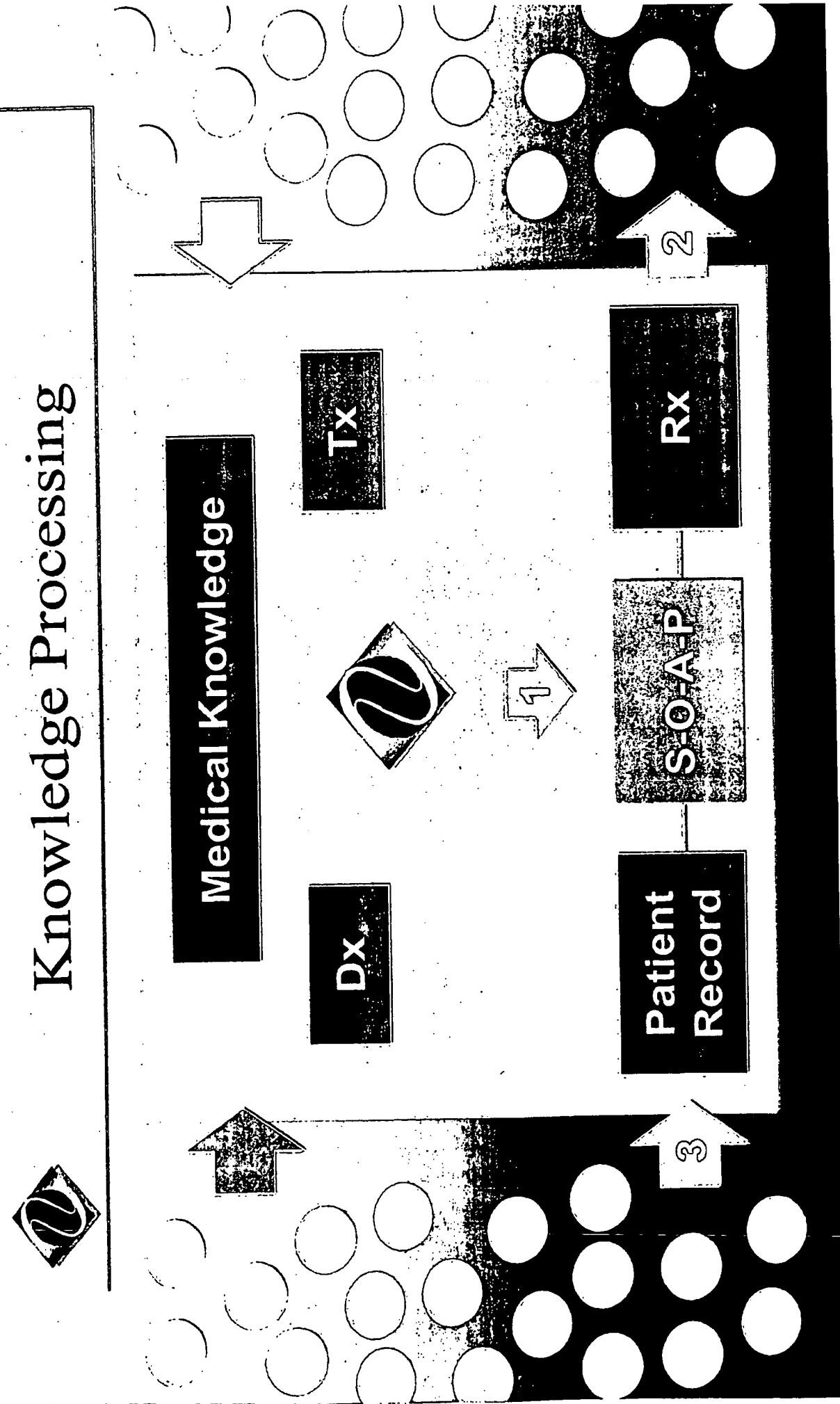
- Price
- Access
- Ease of Use
- Awareness
- Time

Desk-bound
Document Processing

The Real Cost of Knowledge

- Time
  - » Convenient Access
  - » Ease of Use
- Money
  - » Price

Minimize the Cost of Knowledge

Knowledge Processing
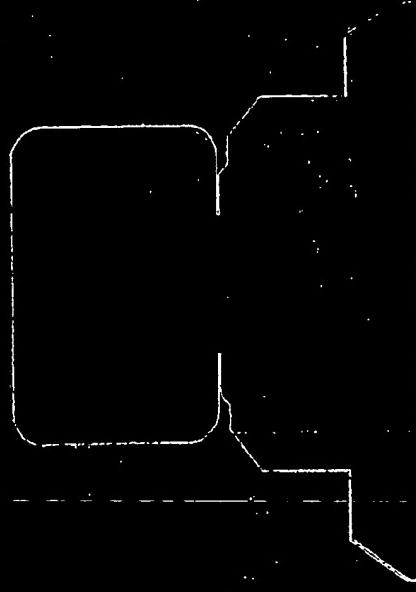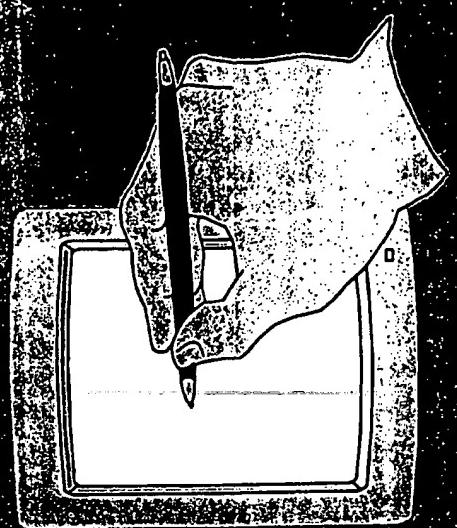
Medical Knowledge

Dx

Tx

Rx

S-O-A-P

Patient Record

1

2

3

Physician "Desktop"

Desk-bound
Document Processing

Mobile
Knowledge Processing

Physician "Desktop"

Points of Entry

Home

PC
Smart Phone
PDA

Office

PDA
Smart Phone
PC
Office Network

Hospital

Dedicated Terminal
PC
Hospital Network
PDA
Smart Phone

Physician Market Strategy

Phase I	Phase II	Phase III
Knowledge	Rx	Patient

National Health Card Network

Strategic Alliances

○ **Phase by Phase**

  Sector by Sector Cooperative Participation

○ **Cooperative vs Competitive**

  Market Growth vs Market Share

○ **Physician "Desktop" Control**

  First Mover Advantage

  Physician Use: "All or Nothing"

Welcome to

Physicians' Online

A Personal Online Medical
Information and Communications
Service for Member Physicians

(MESSAGE HERE)
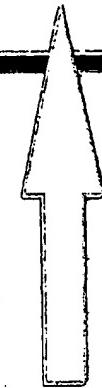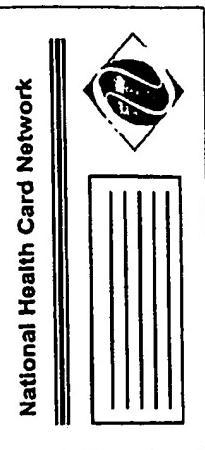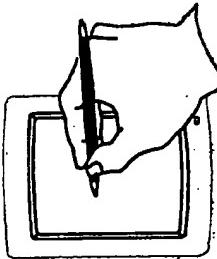
Physicians' Online

SERVICE WORKSPACE
(USER-DEFINED SCROLLABLE REGION)

MESSAGE
(SPONSOR-DEFINED REGION)

Physicians' Online

Physicians Online

Main Menu

< 1 >   Literature Search (MEDLINE)
< 2 >   Diagnostic Support (QMR)
< 3 >   Drug Information (USP)
< 4 >   Society Forums (ACP/ AAFP/ ACC)
< 5 >   Special Interest Forums
< 6 >   Industry/Company Forums
< 7 >   Mail
< 8 >   Personal Services
< 9 >   Membership/Account Information
< 0 >   Quit

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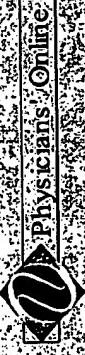
Physicians' Online

Linked Product Menu

<1> Detailing
<2> Product Information
<3> USP Drug Info
<4> Related Literature
<5> Patient Information
<6> Company Forums
<7> Special Offers
<8> Information/Sample Requests
<9> Review other Products
<0> Return

(MESSAGE HERE)

Phase II:
Facilitating the Shift to Managed Fulfillment

14
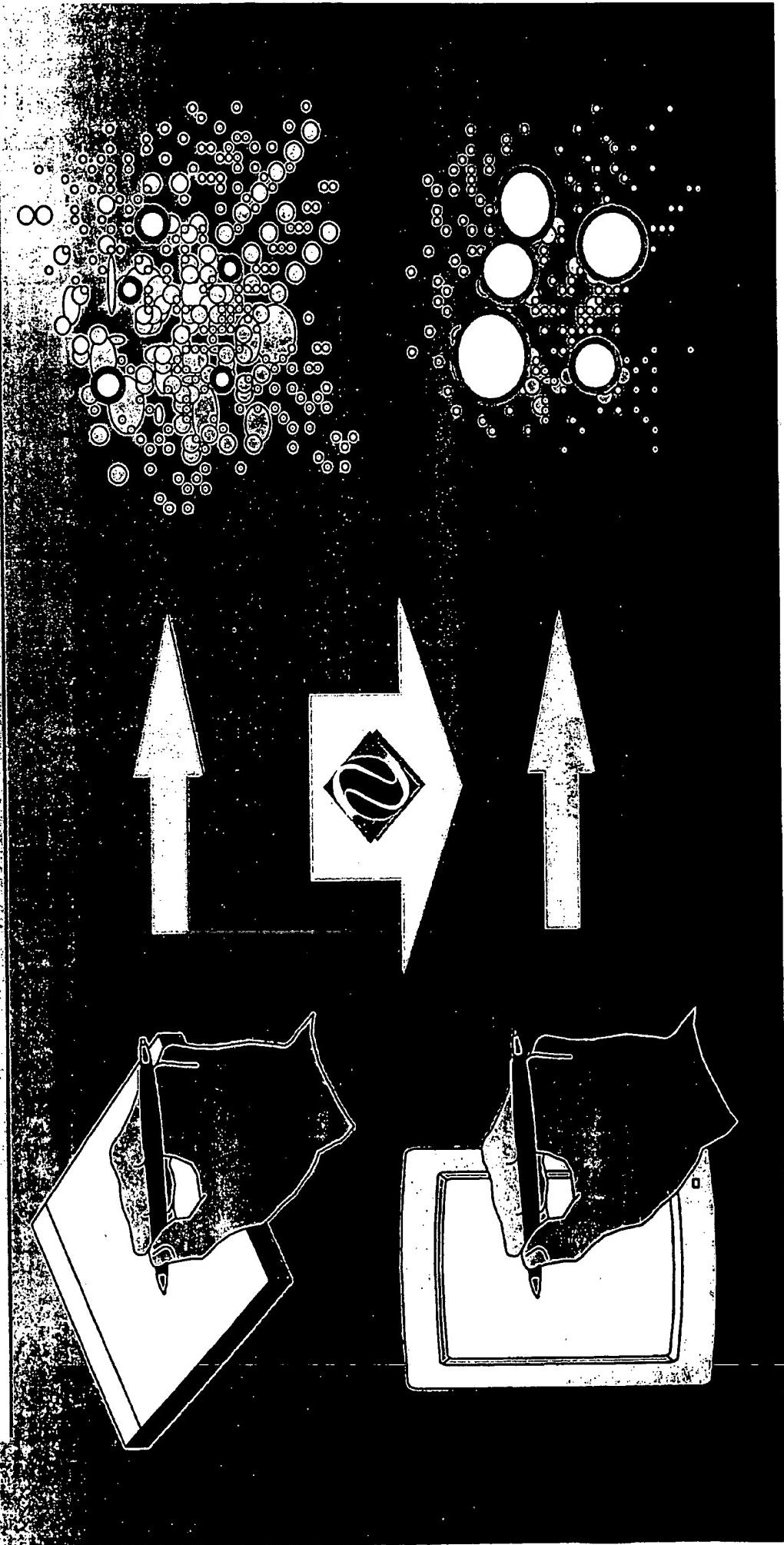
Influencing Prescriber Choice

In Each Therapeutic Class

- Prescriber's 1st Choice
- Alternatives
- Patient's Formulary

Smart Scripts™ Structure
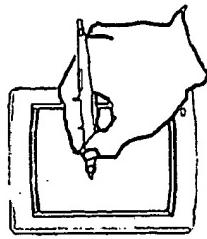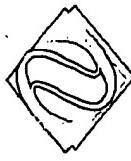
Prescription

Patient-Specific Formularies

Organization-Specific Formularies

National Formulary Standard

Therapeutic Equivalents

Pharmaceutical Data

Keys to Success

○ Physician Membership & Use
  – "Physician-centric" Market Strategy
    » Minimize the Cost of Knowledge

○ Market-driven not Technology-driven
  – Systems Integrator of Existing & Leading Technology

○ Integral Industry Participation

○ "First-Mover" Advantage

"First-Mover" Advantage

Phase I

Existing PC Installed Base
MEDLINE Users
Sophisticated Users
On-Site Terminal Base
"Membership"
MD Society Support
Rx Industry Support
Prescriber-level Targeting
Psychometric Data
PDA Beta Test

Phase II

"Smart Prescription Pads"
PDA Installed Base
Prescriber Assistance Prgm
National Online Formularies
Rx Fulfillment Network
Managed Care Support
Prescription Data
"Health Card" Beta Test
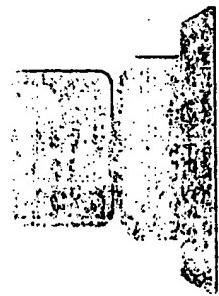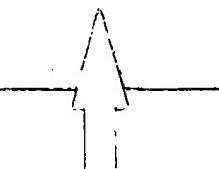
Phase III

National Health Card Network

"National Health Card"
Cellular Data Network
Diverse POS/PON Base
Electronic Patient Records
Claims Processing
Clinical Data Retrieval
Fulfillment Networks
Cost-Containment Programs
Industry-wide Support

Physicians Online

A personalized online medical information & communications service dedicated to empowering physicians with the tools essential to advance the quality and control the cost of health care through informed decision-making.